GLOSSARY

NECA Elects Cindar To Board

9/67

Joe Cindar was elected to fill the position on the board of governors of the Numismatic Error Collectors Association, due to the resignation of Harry Parshall. He was chosen from a list of five candidates.

NECA made final plans to found an Error Museum, when Mort Goodman named James Heine as curator. Assistants are also wanted and application will be accepted for those positions to make the project run smoothly.

Information on membership in NECA is available from Harry Handmaker, 5704 Penn avenue, Apt. V-211, Dept. RAB, Pittsburgh, Pa. 15206, according to Duane Spellman.

Wallace New NECA Leader

Don Wallace was recently advanced from vice president to president of the Numismatic Error Collectors of America. He replaces Harry Hanmaker who was forced to resign because of illness in the family. NECA officials announced that a new vice president will be named in the near future.

Membership in NECA is now in the 700 figure, according to a spokesman who said a 1964 partial collar nickel error will be given to the person who recommends the 800th member. The new member will receive a like award.

The contest is open to any NECA member and the name must be on the application.

Information on membership in NECA may be obtained from Marilyn Dobbins, 4024 Jay street, Duluth, Minn. 55804, or G. B. Roberts, 3106 North Jackson street, Odessa, Texas 79760.

Error Collectors Hold Hollywood Event

Participating in the recent show of the Numismatic Error Collectors Association in Hollywood, Calif., were Roy Gray and his father, Lewis Gray, photo upper left. Roy won the world champion exhibit award at the NECA event. In the photo, upper right, Arnold Margolis, Dr. Philip Speir, Duane Spellman and Mort Goodman discuss the group's new judging system. At lower left, from left, Jackie Cole, Jayne Goodman, Joyce Butler, Duane Spellman and Crilly Butler discuss action at the NECA conclave. In the lower right photo, Harold Mehaffey, registration chairman, thanks two assistants from the Hollywood Chamber of Commerce for their help during the show as Fred Miller, assistant chairman, looks on.

GLOSSARY FOREWARD

BY MORT GOODMAN

One of the most important requirements for the collecting and study of numismatic errors is to have a basic, factual knowledge of the coining process from beginning to end. It is this knowledge which will enable the collector and the student to properly evaluate at which point, how, and why, the various defects occur.

In order to obtain this information for you the writer has spent the past two years in continued correspondence with Miss Eva Adams, Director of the Mint. This correspondence is continuing and through the efforts of Sgt. Milton Jackson and the rest of the N.E.C.A. Research staff we hope to update the information contained herein at periodic intervals.

With the rapid expansion of the minting process new techniques are constantly being employed. Even at this writing the metalic content of our coins is being changed. For this reason some of the information contained in the following pages may have already become obsolete. We ask all of you who have information to this effect to contact the head of our Research department so that we may relay this information to the rest of our members.

We wish to express our appreciation to Miss Adams for the patience, courtesy, understanding and cooperation she has extended to us in enabling us to bring you the very detailed information on the entire die making and minting operation and process.

DESIGN

Selection of the design for U.S. coins is made by the Director of the Mint with the approval of the Secretary of the Treasury. Congress has prescribed a coin design in a few instances. The Washington Bi-centennial 25¢ piece, issued in 1932, which was required to bear the portrait of our first president was such a case. The John F. Kennedy 50¢ piece was authorized by an Act of Congress which was approved on December 30, 1963 and was released on March 24, 1964. This is the sixth portrait coin used in our coainage system. Portraits of Presidents are on all coins now being minted. Except where Congress determines otherwise, the design on a coin may not be changed oftener than once in 25 years.

DRC

GLOSSARY FOREWARD

PREPARATION OF WORKING DIES FROM ORIGINAL DESIGN

Coinage dies have been designed and sculptured by artists whose primary interest was one of achieving a pleasing or esthitic effect. In recent years the effect of design on fabrication has been carefully considered by the engravers at the mint. The massive reverse design of the Memorial on the Lincoln cent and the John F. Kennedy 50¢ piece are the positive results of this consideration.

From an approved sketch for the design of a coin, the sculptor-engraver prepares a plastilene (Modeling Wax) model in bas-relief; keeping in mind the depth of relief suitable for coining. From this plastilene model, which is generally from three to twelve times larger than the size of the finished coin, a plaster of paris negative is cast. Detail work and refining is then incorporated in this negative. From this negative a plaster positive is made and submitted for approval to the Bureau of the Mint and interested parties; either in itself or from photos.

When final approval is received another negative is made. This negative plaster cast is thoroughly dried and treated with hot bees-wax and powdered copper. A conductor is attached and the treated model is suspended in a copper electroplating tank. Copper metal is deposited on the mould from a copper anode by way of electric current. Alternate layers of Copper and Nickel are deposited until a thickness of 1/16 inch or more is reached. This copper shell, or "Galvano", is separated from the plaster, trimed, and,after all defects are eliminated, the shell is then backed with lead to give it more strength.

The completed galvano is then mounted in a Janvier Transfer Engraving Machine. The Janvier Transfer Engraving Machine, to reduce it to its simplist form, consists of a tracing point and a cutting point. This machine cuts the design in a soft tool steel blank directly to the size of the finished coin. This is done by allowing the galvano and the tool steel blank to rotate in equal counter-clockwise motion. The tracing point on the galvano and the cutting point on the blank each start at the center and slowly work their way to their respective ends. This reproduces on the tool steel blank an identical positive hub (pronounced "hob") at the desired reduction in size.

This reproduction is called a "Master Hub". (Hub, or positive indicates a raised design. Die, or negative, indicates an incused and reversed design.) This original Master Hub is carefully stored in a safe place to insure against loss of the original reduction. Till very recently this Master Hub, after having been heat treated and hardened, was used each year to prepare a Master Die.

PREPARATION OF WORKING DIES (CONTINUED)

The Master Hub is inserted in a hydraulic press opposite a matrix which will become the Master Die. This hydraulic press, capable of exerting 150 tons pressure per square inch, does the striking of the hub against the matrix. It takes from three to five impression to properly incuse the design and the matrix is annealed (softened) between each impression to prevent it from breaking from subsequent impressions. This completed matrix has now become the Master Die and it is carefully inspected for any defects. Any additional work on it is done by hand tooling by the chief engraver.

This Master Die is then hardened abd, by the cold forging process, working hubs are extracted. A single working hub is capable of producing as many as 250 working dies. The hydraulic press is used in a simalar manner as was used in making the Master Die from the Master Hub. In the past approximately two thirds of the working dies were given a high polish and used for the making of proof coins.

In recent years the Master Die has been used from year to year until it becomes necessary to replace it. The last number of the date (occasionally the last two) are filled, polished and repunched with the new date.

MELTING AND REFINING

The mint maintains its own Melting and Refining division where the raw materials which go into coinage are processed. This division is devided into two sections.

MAKE-UP SECTION

Here the raw materials are assembled and weighed out to the proper alloys which, till this year, were as follows:

Cents.....95% copper plus 5% zinc
Nickels.....75% copper plus 25% nickel
Silver.....10% copper plus 90% silver

In 1943, because of the great shortage of copper, the War Production Board withdrew the Mint's allotment of copper. The mint toyed with coins of zinc, plastic and other alloys and materials and finally received approval for a low carbon steel coated with zinc to prevent rust. During 1943, metallurgists at the Bureau of the Mint perfected methods of combining material salvaged from expended shell cases with a relatively small porportion of virgin copper so as to mint, with close proximity, pre-war one-cent pieces.

MELTING AND REFINING (CONTINUED)

These cases consisted of 7% copper and 30 per cent zinc, and when melted down with enough virgin copper brought the copper content up to 85 to 90%. These "shell case" copper cents were minted in 1944 and 1945 after which time the Mint returned to the bronze pre-war cent.

The pre-war bronze cent contained 95% copper and 5% zinc and tin. In 1962 tin was eliminated from the one cent coin.

In the Make-up Section the raw materials are placed in "tote boxes". Each box containing sufficient metal to completely charge a furnace. Each furnace charge will produce 2 ingots. The tote boxes are then delivered to the "Ingot Room".

INGOT ROOM

This room is equiped with eight electric furnaces. In an eight hour day one furnace can produce 11 bronze, 10 cupro-mickel or 15 silver ingots.

When the metal has gone through the prescribed melting cycle it is poured through runner boxes into water-cooled moulds. Removed from the molds, the ingots are quenched in a water tank to remove contained heat, so that they can be cleaned. They are then "topped" (rough ends cut off) and stacked for delivery to the coining division. These ingots are 60 inches long, 12 and 7/16 inches wide and 1 and 3/4 inched thick. Ingots for cents and nickels each weigh about 420 pounds. The silver ingots weigh 480 pounds.

It is in the melting and refining process that the first defects can occur as far as planchet metal is concerned. Improper mixing during the melting cycle can ultimately cause streaked planchets. As an example: In the bronze cent there is used a mixture of 95% copper and 5% zinc. A mixture of 70% copper and 30% zinc will produce brass. Thus an improper mixing of the two might produce an ingot with more zinc at one location and a brass streak in the planchet will become very noticeable when the ingot is rolled out. If there is excessive zinc in some portion of the ingot there is bound to be practically pure copper at another portion if the crucibxiles were correctly added. This would give to that portion of the planchet an un-natural reddish appearance. If some of the zinc did not mix at all it would take the form of a silver streak through the planchet.

GLOSSARY FOREWARD

COINING DIVISION

This division of the mint is devided into many different sections or operations. We shall discuss them in the order that the ingot travels from the refining division.

ROLLING ROOM

The large ingots are passed through a breakdown rolling mill. Usually in rounds of twelve. This mill is powered by a 350 horsepower electric motor which exerts 700,000 pounds of pressure. Each trip through the mill is called a "pass". The ingots usually receive from 12 to 15 passes at this mill. At the completion of these passes the ingots have been formed into a strip 1/4 inch thick, 12-1/2 inches wide and 37 feet long.

The reduction of the metal in rolling makes nickel and silver slabs so hard that they must be softened in whatvis appropriately called a "Slab annealing furnace."

The strips then go to the finishing millwhere they are again subjected to from six to nine additional passes until they are rolled to the desired thickness. An electric micrometer is employed which signals the operator when the strip is of the required thickness.

After completion through the rolling mills the strips are now 225 feet long and after being cut in two they vare formed into coils, each 5-7/8 inches wide.

It is during this rolling process that several types of mint errors can occur. The thick and thin planchets may occur due to many causes. The occluded or trapped gasses occuring during the molding are now either dissopated or causing the laminations from those which still remain trapped between the pores of the thin strip. Some of these will still remain trapped until the striking pressure forced them to the surface

BLANKING

The coils are now taken from the rolling room where they are fed into automatic punch presses. The first cutting from every sheet is weighed to see if the blanks are of the exact weight. However, those punched from the end of the sheet are not similarly weighed and here, again, a thin or thick planchet could get through undetected. This is especially true of the cent, nickel and dime as they are not subjected to any further weighing.

BLANKING (CONTINUED)

The punch press consists of gangs of steel rods of the size for the planchet desired. These steel rods come in contact with the metal strips and literaly push through it under very heavy pressure causing circular blanks, the size of the rods, to be pushed out and through slightly larger holes cut in the plate the sheet travels on and directly below the rods. These blanks fall into a container directly below,

The sheet is fed into the punch press by a cam operated set of gripper rollers. On the upward stroke, after leaving the planchet strip, the gripper rollers move the planchet strip a specific distance to properly feed in unpunched material It is at this point where the clipped planchets occur. Contrary to popular belief the planchets do not, in themselves, get clipped. What does occur is that a sheet may sometimes not move the required distance due to a malfunction of the gripper rollers. When this occurs the punching rods punch into parts of the sheet that has previously been punched and an incomplete planchet occurs. These, naturally, take the form of curved clips. A straight clip will occur when the sheet being fed in is not properly centered and allows the cylinders to come in contact with the edge of the sheet. The other type of clip is the ragged edge clip. This occurs when the rods come in contact with the end of the sheet where the metal may not be evenly cut.

REVOLVING RIDDLER

The purpose of this machine is to remove clipped planchets, fragments, foreign matter and small metal particles. It appear much like a wire mesh cylinder in the shape of a milk bottle with a similar small opening. It is in a horizontal position with the opening on one side. As the riddler revolves the planchets fall out of the opening. Scraps and small shavings fall through the mesh wire and clipped planchets remain in the bottom of the riddler.

BLANKING, ANNEALING & CLEANING

Here the metal of the blank planchets is softened by annealing in gas furnaces. This is a revolving furnace which allows uniform heating of all planchets.

From this furnace they are placed in tumble barrels (rotating cylinders) containing a chemical solution of dilute sulfuric acid and cream of tarter. This burnishes and cleans the metal of the discoloration caused by the heating. It is at this location that the "copper colored" nickels occur. The mint does not change this solution for each denomination and if a large batch of cents planchets precede nickel blanks the copper residue will discolor the nickels.

BLANK ANNEALING & CLEANING (CONTINUED)

The blank planchets are then washed and placed into a centrifugal drying machine.

It is during this cleaning process that the planchets obtain what is called "Mint Luster". The blank, at this point, is what is refered to by collectors as a "Type I" blank. It does not have the upset rim. Some of these do get out of the mint by missing all of the remaining processes. The chance for this to occur is very unlikely and makes these types very rare. This type of blank is easily fabricated outside the mint and it pays to have the blank authenticated before you purchase it

These planchets are punched out in gangs of 8, in the case of the cent and dime; seven in the case of the nickel; six in the case of the quarter and five for half dollars. One punch press can produce 2,000 cents or dimes per minute and this is why four punch presses are able to keep up with 29 coining presses.

PRESS ROOM

After cleaning the blanks are taken to the press room where they will go through their final stages. This is where the raised edge on the blanks is made by subjecting them to a side rolling operation in an "upset Mill". Here the blanks pass through a narrow groove between two concentric rollers. One fixed and the other moveable. In this manner a raised rim is effected that will protect the design of the coin from excessive wear and allow for easier stacking. At this point the blank is refered to as a "Type II" blank and is considerably smaller than the finished coin.

The upset blanks are then given a close inspection and, in the case of quarters and halves, such weighing as may be necessary by automatic scales. This weighing does not take place in the cent, nickel and dime because of the increased production.

The press room at the Denver Mint is equiped with 29 presses. One of these presses dates back to 1876 and is still in operation. Others date back to 1906 when they were first built in Philadelphia for the Denver Mint.

GLOSSARY FOREWARD

PRESS ROOM (CONTINUED)

The blanks are delivered to the press room balcony where they are dumped in chutes extending into the press room. In the Denver Mint there are six chutes on the east side of the room to service 12 presses and four chutes on the otherside. The blanks fall into containers, each holding 2,500 ounces of blanks which are scoop fed into feeder-hoppers on the presses. The production of cents, nickels and dimes is 100% by dual stamping. (Two coins struck at one stroke.)

From the feederhopper the planchets are fed, one at a time, into the collar which surrounds the stationary die. (reverse) The mechanism that performs this task is called a "layer on." Its actions are similar to two mechanical fingers. The upper, or hammer die, then strikes the planchet. The pressure used is 30 to 40 tons for a cent or dime; Sixty tons for a quarter and 75 tons for the nickel and 50¢ piece.

As the hammer die recoils after the striking the stationary die rises up in the collarallowing the coin to come in contact with an arm of the layer on and it is ejected as the next planchet is fed in. This ejection causes the coin to roll out into a hopper where a press operator, with a magnifying glass, inspects one, two or three coins, intermittently, in case there might be some imperfection. If he sees none the hopper is emptied into a large metal box. If he finds any defective coins, he checks further in the hopper and sends back all imperfects to be remelted.

In the case of silver coinage the inside of the collar is grooved or reeded. The pressure of the stamping not only forces the metal of the planchet into the recessed portions of the design of the die but also into the grooves of the collar thus imparting the reeding to the finished coin. The reason for this reeding on silver coins is so that it can not be shaved, without detection, to obtain the silver from the coin.

Various types of errors can occur during the striking of a coin. These are called "mechanical" types of errors as they are caused by malfunctions of various parts of the machinery.

Because of wear, dies will crack, chip and break at various times and locations. These, along with initial imperfections caused during the forming of the die from the hub are called "die errors". A single die will produce from a million to a million and a half coins in the case of the one cent.

PRESS ROOM (CONTINUED)

400,000 strikes can be made for a nickel dies and 700 to 800 thousand for silver coins. When a die is worn out it is destroyed. There is no re-engraving of working dies done at the mint and none has been done for many, many long years. To the best of our knowledge not since 1943 when steel planchets caused excessive wear on dies and the design was "touched up".

COUNTING ROOM

The final operation from mint to bank occurs in the counting room. The finished coins are sent to the counting section. Here the coins are counted by automatic machines, sacked and weighed. Each of ten automatic counters counts coins at the rate of 2,000 per minute going into bags. The bags, when filled, are sewn at the top by a hand sewing machine. Fifty Dollars in cents; $200.00 in nickels and $1,000.00 in dimes, quarters and halves are packed into bags. The bags of coins are stored in vaults until orders come from the Director of the Mint in Washington, D.C. for shipment to the 12 Federal Reserve banks and their 24 branches, as well as to the Treasury Department in Washington, from where the local banks all over the nation obtain their coins.

Worn and unfit coins are withdrawn from circulation and returned to the mints where they are melted down and the metal reused.

PLANCHET WEIGHT

One of the major factors in determining the authenticity of any coin is the exact weight. The following is a list of the grain weight and metal content of all U.S. coinage used through 1964.

KIND AND DENOMINATION		METAL CONTENT Grains	GROSS WEIGHT Grains
Silver:	SILVER	COPPER	
Standard Dollar	371.25	41.15	412.50
Half Dollar	173.61	19.29	192.90
Quarter Dollar	86.805	9.645	96.45
Dime	34.722	3.858	38.58
Minor Coins	COPPER	NICKEL	
Five Cent	57.87	19.29	77,16
	COPPER	ZINC	
One Cent	45.60	2.40	48.00

The 1943 Cent contains 41.5 grains of zinc coated steel. The war nickels contained 27.006 grains silver, 43.2096 grains of copper and 6.9454 grains of manganese.

FROM THE DESK OF THE PRESIDENT

In the slightly more than a year that NECA has been in existence, we have seen fit on a number of occasions to start radical programs and after a short time, see them falter and have to either abandon them or revise them drastically. The ability to do this has been the very heart of NECA's huge success. In brief, we quickly learned to say, "Oops, we goofed. Let's do it this way and make sure we get it right!". Hence, we were not saddled by obstinacy or vanity and were able to try and try till we got it right. The trial and error method has evolved our most successful programs to date.

Once again, we are going to make an about face. It will benefit the membership in our opinion as befits a club of our status and calibre.

It was originally planned that the NECA Glossary of Numismatic Definitions be issued as the members joined NECA. Those in the first year were t o receive everything from the beginning, and those joining after would have the privilege of buying back issues if they chose to catch up to the older members. Well, we did some hard and fast thinking and have agreed that this was wrong.

The heart of our club is the quality of the membership. Ours is a membership which engages in a most advanced phase of coin collecting, and requires advanced knowledge and training. It is now felt that each NECA member needs every part of the NECA Glossary as BASIC KNOWLEDGE to be properly equipped to pursue the hobby in an enlightened and proper manner.

Consultation with the NECA Board of Governors has borne this out, and the OK has been given for us to issue the ENTIRE NECA GLOSSARY to every NECA member, new, old, or future. This means that every member of NECA regardless of when they joined NECA, will be entitled to every single page of data and information which has ever been issued in this program.

Through a generous donation from Jim Johnson, we are able to buy a supply of mimeo paper to use in this huge endeavor. All we ask is that each member help us with the postage and costs of mailing.

To obtain your Glossary sheets simply send a letter to:

Millie Nead
2126 Middle Drive
Slidell, Louisiana

and include 25¢ and a note indicating when you joined NECA and what you are missing. The 25¢ will go to pay for a 9"x 12" envelope to send the pages in, and the postage needed. Millie will take care of the rest.

To those of you missing individual sheets, write to Millie and she will send those to y ou also, if you enclose a self addressed, stamped envelope.

Now this is different from past instructions both in the Errorscope and in the Information pamphlet. Please change the pamphlet page to read as this page does. Older instructions are now void. That's what we mean by an about face. We were wrong to restrict distribution of the Glossary. This will help to rectify this error in policy. We hope you agree.

Arnie Margolis

GLOSSARY OF NUMISMATIC ERROR DEFINITIONS

BY NECA

INDEX

Summer, 1966

In conjunction with the current policy regarding distribution of the NECA Glossary, the following is a complete index of all the pages issued to date. Every NECA member should have one copy of every page listed. If you are missing any, see the reverse side of this page for information on how to obtain yours. This index supercedes all previous ones.

Insert this page before the first page of your Glossary (NECA I), and discard previous indexes. As new pages are issued, we will issue revised index pages periodically.

A GLOSSARY OF NUMISMATIC ERROR DEFINITIONS

The pages which follow represent a compilation of definitions of known Numismatic Errors of all categories. To more fully appreciate and use this glossary, it is suggested that the following things be done by you, the collector:

1. These pages are all punched for loose leaf binder. Put them in a sturdy binder, preferably one sold for use with 20 pocket plastic coin holding pages.

2. Obtain a supply of 20 pocket plastic pages from your local dealer.

As you receive pages to be added to this book, insert a 20 pocket plastic page after each definition page. In these plastic pages, mount those error coins which are in your possession which are described on the definition page. In this way, you will assemble an ILLUSTRATED GLOSSARY which will become the most valuable book you will own, both from the coins contained and the knowledge and research they represent.

It is suggested that this volume become the nucleus of your error collection and it can be the means by which your interest and knowledge of errors reach a new high. Membership in NECA automatically entitles you to monthly additions to this Glossary which is being prepared by the finest minds in Numismatics today. Mailings will consist of at least one new definition page each month, and in many cases multiple sheets.

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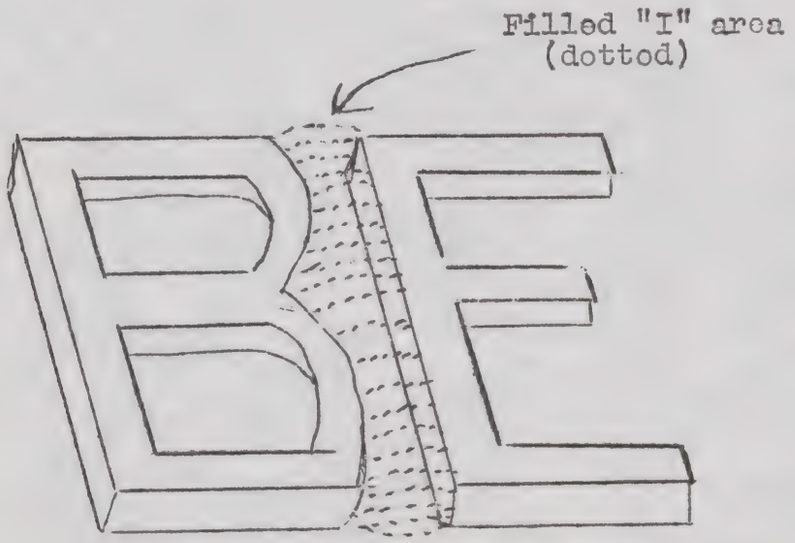
THE "BIE" CENT

The LIBIERTY cent is the result of a die chip between the "B" and "E" of Liberty in the Lincoln Cent. The die failure creates a void where there should be die material to make the depressed space between the B and E in the cent.

To visualize how the die failure occurs, take a well struck cent, preferrably one in mint condition, and press it onto a soft piece of clay with the obverse down. If you then remove the cent carefully, the resulting impression in the clay will remain behind. This "negative" impression is how the die which makes the cent looks like. Using a medium power magnifying glass, examine the "BE" section of the impression. You will readily see the slender raised portion of material between the two letters.

When the penny blank is struck in the press at the Mint, the flow of copper metal into the various crevices of the die creates stresses and strains which impress great force on the thin steel segment of the die between the B and E. Eventually that segment breaks away from wear and metal fatigue due to much use. In later strikings of coins, the copper pushes into the space between the two letters left by the missing piece of steel, and the finished coin has an excess of copper metal where this space should have been between the B and E. This buildup of copper has the appearance of the space the steel die part used to have and this looks like a long thin lump of copper. It looks like the letter "I" squeezed between the B and E in the finished cent.

Varying degrees of steel chipping in the die create partial "I's". This is how the many varieties of BIE cents currently known are formed. If the die chip is small, a partial "I" is formed. If the die chip is older or more complete and pronounced, we get the more complete or full "I".



THE "JOINED R_T" CENT

In 1953 the Philadelphia Mint produced a cent with a very easily spotted error. There was a die break which occurred between the "R" and the "T" which resulted in a bar forming on the cents which was the same size and shape as the outlines of the letters themselves.

Thus the R and the T had a joining piece of metal which actually looks as though it was intended to be there. The bar extends from the right tail of the R to the lower extremity of the T.

There are no other years which produced this error. However, there have been reports of a 1944 cent in which the D and W of GOD and WE are joined in a similar manner.

Joining bar caused
by die break or chip

THE CLIPPED PLANCHET

By Mort Goodman

The term "CLIP" has been popularly applied to any coin or planchet of which a portion is missing. They can be classified into three types or catagories: The curved, straight and irregular. The names for each being derived from the shape of the edge having the incomplete portion.

The usage of the term "CLIP" is xxx misleading. It would seem to imply or indicate that a portion of the coin had been removed or "Clipped". This is incorrect. Nothing has been removed or clipped from the planchet. These planchets were punched out with those portions already missing.

To illustrate the blanking operation and how these defects occur we have prepared a diagram at the bottom of the attached sheet. We do not contend that the diagram is accurate either to size of the planchet strip, the number of holes punched with each stroke, or the diameter and exact spacing of the holes. We illustrate a 10 punch operation because we have available a device to draw it. The mint advises they use an eight punch operation for cent planchets.

The blanking operation consists of the sheet of planchet material being fed into a punch press type operation by a set of gripper rollers on either side of the sheet. The group of cylinders come down under pressure, punch out the blanks and as it returns the gripper rollers feed in the material a certain set distance.

In the diagram, punch number one can be considered normal. In the case of punch number two there has been a slippage in the operation of the gripper rollers and the sheet has not moved far enough. The group of punches are now in a position where they overlap the holes left from the previous punch. This, as you can see, produces the curved incomplete planchets. In punch number 3 the sheet has not only failed to move the proper distance as in punch number two but has also slipped down allowing the top punches to come in contact with the edge of the sheet. This results in the straight type as well as the various combinations you see. For the purposes of the diagram we have shown, in punch number 4, what occurs when the end of the sheet arrives and the punch comes in contact with it. This accounts for the irregular type which would otherwise be a normal punch.

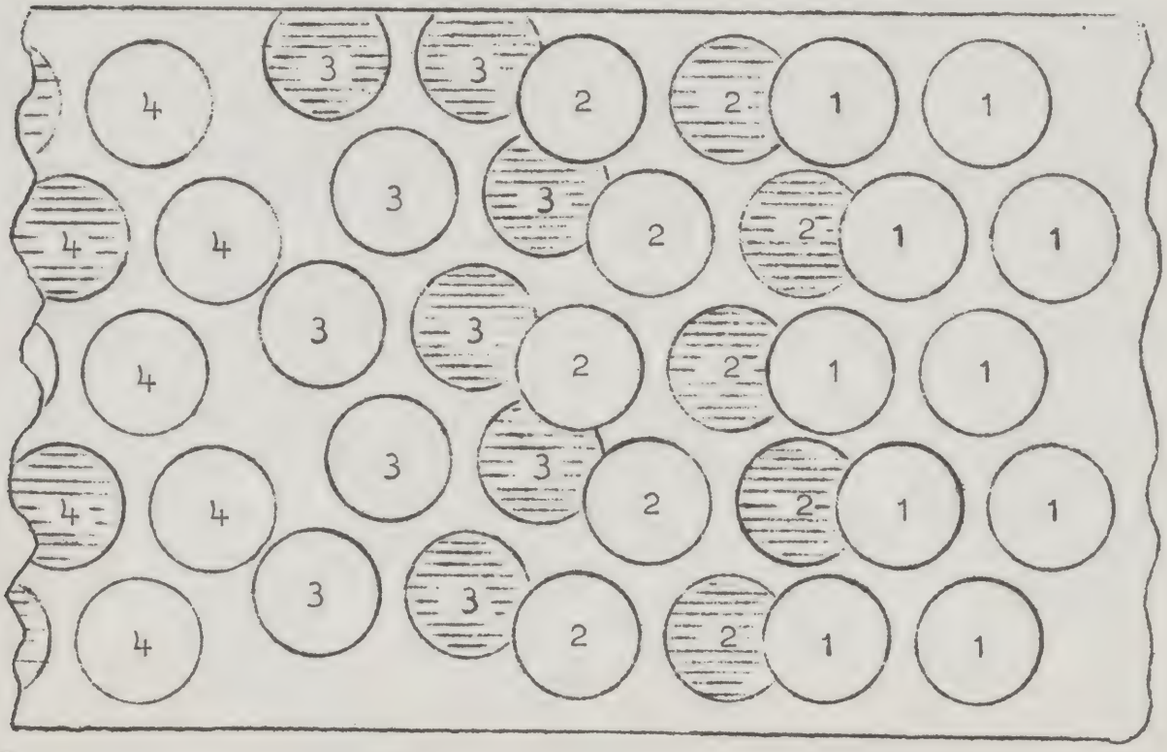
As you can see from the illustration the term "CLIP" would not seem to be a proper one. In the case of the curved type, the missing portion is already a part of another planchet. In the case of the straight and irregular typesm the missing portion has never existed. The proper term for this type of defect would seem to be "INCOMPLETE PLANCHET". However, since the term CLIP is so popular we will bow to its usage.

THE CLIPPED PLANCHET

The fabrication of this type of coin, outside the mint, is quite prevalent. To those that have the knowledge any such fabrication can be easily detected. We wish to pass on to you this knowledge so that you too can detect these fabrications.

When the design is placed on the planchet in the coining press the planchet is held in place by a collar. The pressure exerted on the planchet causes the metal to move into the recessed portions of the die thus forming the design. In the case of the incomplete planchet the metal will also move towards the additional path of least resistance between its edge and the collar. If there is any design at this location the additional relief will not allow the design to be properly imprinted. The design will tend to taper towards the edge and in some cases will be lightly struck as in the case of a thin planchet. When you see an incomplete planchet that has a normal design at this location that appears to be very sharply cut off the chances are that the defect is not authentic.

There are many charts now in existance that give various methods of determining the amount of the clip in percentage. While we do feel that this method is a good "guide", the most accurate method is the acutal weight of the coin. As an example: The normal weight of a cent planchet is 48 grains. Thus, an incomplete planchet that weighs only 43.2 grains would be considered to be 4.8 grains light. Since 4.8 is 10% of the 48 grains the planchet could b e properly determined to be a 10% clip. Your Research and Authentication staff will be happy to supply you with this service on the same basis as the Authentication Service.



THE CRACKED SKULL CENT

The nick-name "Cracked Skull" was one of the first applied to the Lincoln Cent. It was so appropriate that the name has stuck through the years to describe any die break or crack on the head of Lincoln, except if located in the facial area. The name carries the basic description of the error.

Note that we atate "die-break". This is not to be confused with a lamination of the planchet itself that appears on the surface. A lamination is extra flaked metal which has a different appearance.

When a die cracks, it will leave a small fissuee in the die, much the same as an earthquake leaves in the earth. When the metal of the planchet is struck by the dies under 40 tons of pressure, it "moves" into this fissure or crack. The result of this on the coin is a raised line of extra metal. Scratches or marks on the other hand, are usually due to circulation damage.

Since the cracked skull error is a reoccurring one, you might ask why it appears in this location in almost every date and mint. Actually, the Lincoln Cent die has two deeply recessed areas, the upper portion of the head or "skull", and the shoulder just at the VDB. The die is naturally weakest at its deepest recessed portion because of the strain placed on the metal in the making of this recessed portion.

An important factor too, is the lack of design at this particular point on the reverse of the coin. This creates additional pressure on the die at this location, since the metal of the planchet has only one way to move. When the new Lincoln Memorial design on the reverse came into existence in 1959, it eliminated this problem to a certain extent, although we still are able to find cracked skulls in these later dates.

A collection of cracked skulls in every date and mint would certainly be an interesting one. It should be noted that in many dates there are many different varieties of this type of error on the same year and mint. Research into what dates and mints are known to have this type of error would also prove extremely interesting.

To our knowledge these areas of research have been largely ignored due to the popularity of the BIE cents and the Double Mint Mark coins. Perhaps someone will undertake to examine this area of error coin interest and assemble the data which will clarify the records for others to come along later on. At sometime in the not too distant future, it is planned that the NECA Museum of Numismatic Errors will have a section devoted to this area of research.

THICK AND THIN PLANCHETS

The thick and thin planchets offer an interesting area for the error coin collector. Perhaps you have paid no particular attention to the thickness or thinness of a coin, but often there is considerable difference. Of the two, the thin planchet is the more prevalent; more recognizable; and, in most cases more interesting.

There are many problems involved in the rolling process which may affect the thickness of the metal strip from which the coin planchets are made.

The metal ingots from the furnace are about 1 3/4 inches thick, 60" long, and 12 7/16" wide. When rolled down to the regular planchet thickness, an ingot ends up as two coils of metal, each 5 7/8" wide and 225 feet long. This is done by the use of what is called a "Breakdown Rolling Mill" capable of exerting 700,000 pounds of pressure. (See Forward: This takes as much as 22 operations)

After the Breakdown Mill, the metal is fed through a "Finishing Mill" which has micrometer attachments. The planchet sheets are supposed to end up being of uniform planchet thickness. We know that mechanical malfunction of the rollers and other mechanical devices can cause high spots and low spots in this sheet.

Some of the causes of thick and thin coins are:

1. Lack of adequate control on rolling mill tolerances.
   If too much pressure is used on the rollers, the resultant strip of metal will come out too thin. The thin strip, if used for making planchets, will result in coins which are too thin. They will have less metal and will weigh less than normal.
   If too little pressure is used on the rollers, they will not press the strip hard enough and the resultant strip will be too thick. The thick strip, if used for making planchets, will result in coins which are too thick. They will have more metal than is normal and will weigh more than the average coin.
   This is the most usual cause of differences in coin thicknesses where there is a greatly noticeable departure from normal coins.

2. The presence of gas pockets or impurities in the rolled strip can prevent the strip from remaining a solid piece of metal.
   If you can imagine a Swiss Cheese being pressed into a flat pancake with the holes being compressed into flat pockets of gas, you have a similar situation. The pressure doesn't blend the cheese into a solid mass, and if you slice it, the holes will still be there. It is the same with metal used in coining.
   If a planchet is punched out of the strip of metal that has a hole due to a gas bubble or impure foreign matter, that hole will be carried in the planchet. If the planchet is punched "just right", it may split in half like two slices of bread spreading apart. The two slices will be thinner than the usual planchet and the "inner" sides may show striations or lines which are the grain of the metal.

If these halves find their way into the coinage press, they will become coins which naturally will be far thinner than normal.

This is a random thing and there is no predicting where or when it will happen. It is caused by poor control over the mixture being created in the furnaces which blend the alloys going into the ingots from which the strip is made. For more information on this, see the Glossary Forward for an explanation of the operation in the furnace room and rolling mills.

3. Variance in the hardness of metals.

If the alloy isn't mixed to the correct proportions in the crucibles which are emptied into the furnaces, then we have a metal that is different from the standard alloy the coins call for.

For example, nickel is a very hard metal. The five cent piece uses an alloy of 25% nickel and 75% copper in its metal. If an error occurs and there is too much nickel used, (let us assume the mixture is 50% nickel and 50% copper), the rolling mills will be unable to squeeze the strip to the required thickness without considerable readjustments by the workmen in the mint. If it gets by unnoticed, we have all sorts of off thickness coins coming out of that batch.

4. Lubrication difficulties resulting in separation of the rollers.

Here we have a purely mechanical problem which is the result of poor preventative maintenance. If the machinery isn't lubricated regularly, there will be possible erratic action resulting. These days of 1964-65 during the coin shortages, there is a greater tendence for the Mints to squeeze out a few extra hours of operation before stopping for routine maintenance. This can lead to problems if let go too far.

5. Proper maintenance of temperatures.

If the electric furnaces where the alloys are mixed are too cool, there can not be an adequate blending of the metals in their proper proportions. Thus one end of the ingot can have a batch of nickel in it and copper in the other end. This can also create the situation referred to in No. 3.

It is something like having a chocolate ice cream soda where the syrup was all left at the bottom of the glass from lack of stirring. You have a chocolaty taste at the bottom and soda water at the top. If you can imagine the syrup to be one melted metal and the soda water the other metal melted in the furnace, you can readily picture the results.

6. Thin planchets can also occur from the complete splitting of a planchet because of occluded gas. Occluded gas is a form of trapped gas bubble as described in No. 2.

7. "End of the run" can also be a cause of thin planchets and the resulting coins as well.

When the ingot is rolled down to the planchet thickness, the end of the 225 foot strip may lack metal to make the planchet the required thickness.

As a guide for determining whether or not you have found a thick or thin planchet or coin, it would be well to keep these points in mind:

1. Since there is no weighing of other than silver coins during the minting operation, these defects are most common in the nickel and cent pieces.

2. Because the rim of the coin looks thicker than normal, it does not necessarily mean that the planchet is thick. This can also be caused by over pressure when being struck and the center portions may be thinner than normal. This would be measurable by micrometers. Also the weight of the coin in question will be a strong clue. If it is of normal weight, the press pressure is undoubtedly the problem.

3. Visual observation in determining a thin cent is the very weak strike and missing design from the coin. Actual weight by a grain scale is necessary to determine the exact amount or percentage that the coin is thick or thin.

4. Thin coins will sometimes give the appearance of a sunken Lincoln on the reverse. If there is not enough metal in the planchet to properly fill up the design on both dies, the metal will take the path of least resistance.....first filling up the deeper recessed obverse die design.

5. A true thin planchet will always be the same size in circumference as a normal coin. This is the best way to detect acid treated coins. The acid, while making the coin thin, will also make it smaller. The diameter dimension of the acid treated coin is a dead giveaway.

6. Thin coins are also products of planchets with less than normal metal present. We are not considering clipped planchets, imperfect edges, fragments, and similar damages. These are caused in the blanking operation and are described and treated elsewhere. However they can be another cause of lighter and thus thinner coins on occasions.

7. One sided coins are also caused by mischief and "man-made" sources, such as "filed" to thinness. This can be detected if you remember that a filed coin will not have the "upset rim". The only reason that might cause a once sided coin, is if two planchets go into the press at once. Then the inner surfaces will be blank and when ejected from the press we would have two coins blank on one side, one with obverse impression and one with reverse impression only. They are thinner because of the excessive pressure of the dies, and they are distorted. Their respective weights however would be that of normal coins

The recent change in the alloy of U.S. Coinage has been much publicized. In fact many of you are now finding the new 25¢ pieces with the copper colored "pin stripe" around the edge given to you in change by local merchants. The are fast becomming nick-named the "Sandwich Coins", because of their composition and will be found in the dimes and half dollars in the next few months.

In size and design they will be identical to the present silver coins but their weight will be slightly less. Several specimins of the quarter, recently weighed, showed them to be 88 grains as compared to the 96.45 grains in the silver coins.

The new dime and quarter, both silverless, will outwardly be of a metal slightly darker than silver. This is, in fact, a cupro-nickel alloy of 75% copper and 25% nickel that is presently used in our nickel coinage. A pure copper core between these faces, the sandwich "filling" gives the copper colored pin strike to the edge.

The new half dollars will also be a three layer coin but will have no copper pin stripe. Outside it will be of a lusterous 80% silver alloy. Inside it will have a still shiny 21% silver alloy. This will give it an overall silver content of 40% as against the present 90% content.

Besides being lighter the new "Sandwich Coins" will resist wear much better than the silver coins. Their "ring" will not be as impressive, but the new half-dollar will still ring as of old.

No changes have been designated for the silver dollar since none have been minted since 1935 and none authorized in the immediate future. There is a recent statement by Miss Adams advising that production of silver dollars may be possible by 1970. Perhaps they are expecting to mine some silver on the moon as that it the year we expect our landing. It will be interesting to note their content if, and when, production is resumed as it is almost historical that they be called "Silver Dollars".

We have researched very deeply into the "Why" of the new coins. It is quite simple. All of the world's silver mines can not supply as much as is now consumed. Either for coins or jewelery, silverware and photo film. Because of this world silver shortage most countries already have switched to silverless coins of reduced-silver coins. We MUST follow suit as our Treasury's depleted stockpile wouldn't last three years at the rate it is shrinking.

The question of "How" to make silver-saving coins has been under study for the past two years by the Treasury Dept. The final answer came last February when the Battelle Memorial Institute, reporting on three months of intensive research for the Treasury Dept., recommended the now-adopted "sandwich coin."

Behind their choice lay an engineering problem unique to this automated nation: Unaltered, our 12 million vending machines, pay phones, parking meters and other coin operated devices must accept the new coin as readily as the old. This was an absolute necessity for the two year or more job of altering all the coin operated machines would subject you and other users to intolerable inconvenience during the interim and it would disrupt a huge business. (30 billion vending machinex purchases are made yearly totaling 3½ billion dollars.)

This posed the strange task of devising silverless dimes and quarters that would "fool" vending machines into thinking that they were silver. At the same time, the materials would have to meet the needs for use in coinage. These needs being: To have an attractive appearance; resist wear and corrosion; have the ability to take an impression; be of reasonable cost and in ample supply.

The Battelle experts considered other metals actually used in world coins. Copper, bronze, aluminum, nickel, cupro-nickel, silver nickel (copper, nickel and zinc), stainless steel and even exotic new ones such as columbium and zirconium. Quickly eliminated were some with some very picturesque drawbacks:

Aluminum coins would be so light-weight as to cause "havoc", Battelle's report noted, when motorists tried to toss them into a toll highway recepticle on a windy day. Plus the fact that widely available sheet aluminum takes impressions so readily that aluminum coins would be an invitation to counterfeiting.

As for cupro-nickel, the worlds most widely used coin material, it would look odd for a dime sized coin of it to be worth more than a bigger nickel of the same alloy. Pure nickel, used in Canadian nickel coinage was out. A magnet attracts it. Even the simplest U.S. Coin machines accept only coins that are the right size and "non-magnetic".

Finally every solid metal flunked the more elaborate tests by which modern merchandise vending machines reject washers, steel discs, play money, counterfeit coins and cut down pennies.

Besides checking a coins size and non-magnetic character, these sophisticated machines probe it for a hole with a "washer-catcher", weigh it in a cradle, give it a "bounce test" for hardness, and apply a combined "eddy-current" test for density and conductivity that virtually identifies a coins metal. I am now suggesting, however, that YOU test your off-metal coins or those struck on foreign planchets by placing them in a vending machine for analysis. You just might not get an authentic error back.

Sensative as this test is, the Battelle researchers found a way to outwit it. The laminated cupro-nickel-silver and the cupro-nickel copper makeup of the new coins is taken for silver by the machines and accepted everytime, trials show.

That solves the big vending machine problem completely. There is no trouble with the new reduced-silver half dollars; a coin with even as little as 5% silver would pass the "eddy-current" test for silver.

The reason for the new half dollar's sandwich makeup is a different one. The easy tarnishing of its core's low silver alloy, which would soon become unattractive, mottled pink and yellow if used on the outside. So few half dollars are minted compared with dimes and quarters, that the Treasury felt the new half dollar could retain some silver - - thus "continue the 173-year-old tradition of American silver coinage" without imperiling its silver saving plan.

Taken togeather, the new coins will slash our use of silver for coinage by 90%. By law they will be just as "good" and buy just as much as the present ones the president emphasises. And to top it all off we feel that they will be a "boon" to the error collectors until changes are made in our present mint facilities to allow them to produce the sandwich sheets presently being supplied by outside firms. Certainly they will not reject whole batches of coins with die defects and send them back to the manufacturers for remelting and metal separation. I do not believe that their present facilities will be conducive to the separation on metals in the smelting process. So...they may be a little more lenient in what they allow to go into circulation. The first quarter of the new alloy examined by this writer did indeed contain a diepcrack and evidence of some badly worn dies.

DIE DEFECTS vs. CIRCULATION DAMAGE

Any defect in a die, such as a crack, chip or split, due to wear and/or metal fatigue, appears on a coin as raised portions or "extra metal".

To picture how this occurs, we must remember that the coin design is exactly the opposite on the die from the way we see it on the coin. In other words the design is recessed or "incused". (See the BIE Cent page for a clear explanation of this and how you can observe it yourself).

When the planchet is struck under heavy pressure, the metal is forced into the recessed portions of the die by the press pressure to form the raised design of the coin. If, for various reasons a "crack" should occur on the die, it will take the shape of a small crevice or fissure, such as occur in the ground during an earthquake. Since this crevice creates an additional place for the metal to be forced into, the metal of the planchet fills up this crevice and becomes a raised portion on the coin.

To name a few examples, we have "The Cracked Skull", (See NECA #4), some of the "bowties, "Devil's Horns", (See The Penny, October, 1965), the Joined R_T Cent, (See NECA #2), and many others.

Our authentication staff advises that they receive many, many coins for authentication with scratches and gouges on the coin itself. This indicates that many of our members are not familiar with the appearance of a die crack or chip. If such scratches, indented or recessed areas on the "coin" were to be true Mint defects, then the die would necessarily have to have a raised portion on it to make this recess on the coin. Authentic defects such as this are extremely rare. Remember, if the coin shows a recessed indentation such as a scratch or gouge on it, it is usually due to circulation damage. An indentation on the die leaves a raised area on the coin; a raised part on the die will leave an indentation on the coin. It is as simple as that.

A type of circulation damage easily confused with a die defect is a scratch or gouge which displaces metal. Once filled with dirt or grime, it is hard to detect without close scrutiny, since all that is visible is the raised portion of displaced metal. For this reason, it is necessary to cleanse the suspect coin with soap and water as described in the "Cleaning Your Coins" article in the NECA Newsletter, Vol. 1, #7, November 1, 1965. Once the dirt is removed, at least a 10 power lens under excellent lighting should be used. Examine it carefully from all directions.

The gouge or scratch would appear close and parallel to the raised metal, such as would appear if you ran a knife through a bar of butter, or a stick through dirt. The metal pile-up can occur on either one side or the other side of the scratch or gouge, or on both sides, depending entirely on the angle of the instrument causing such scratch or gouge or whether it was done by accident or intentionally as some are.

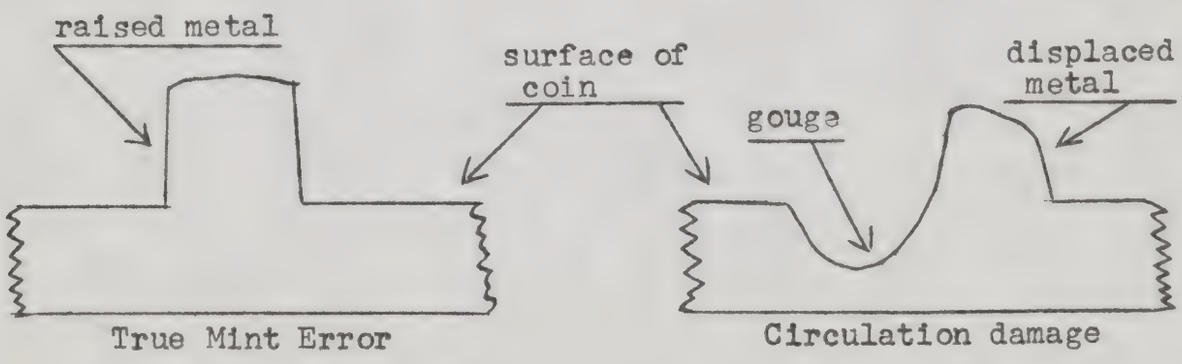
If after careful study, there is no evidence of a scratch or gouge from which the metal could have been displaced to create the raised portion, then in all probability, you have a true die break coin. If you are still in doubt, always consult your authenticator.

Another example of a mistaken error which is quite prevalent, is a coin where a part of the raised design of a letter has been hit and the metal pushed out of position, perhaps toward the next letter. In the word LIBERTY, perhaps part of the vertical bar (or back) of the "E" is pushed toward the "B". The pushed metal in this example give the appearance of a "BIE". This mistake can be spotted if it is examined under at least a 10 power glass and from all directions. If part of either letter appears to be lower at the point of extra metal or gives any other indication of possible circulation damage at this location, it can not be authenticated. Such a coin is better forgotten. So-called "Flat digits" are examples often seen.

Laminations are frequently mistaken as die cracks (and will be discussed in a later Glossary page), but the real die crack will have an identical twin somewhere, while the gouge type and laminations will not.

The ability to recognize circulation damage as opposed to legitimate Mint-made errors is a matter of experience and practice. The more coins you examine and learn to recognize, the easier it becomes. The acquisition of a decent magnifying glass and proper lighting is of paramount importance. Using the proper tools is a must. Remember, any apparent error that can be duplicated outside the Mint probably is not an error and should be viewed with suspicion. Proof of mint origin is necessary and is difficult and often impossible to obtain for that kind of item. It probably should be discarded.

The illustration below is that of a coin sliced in half and you are looking at a cross section of that part of the coin with a true die break, and a scratched coin where the raised metal is accompanied by a gouge from which the raised metal came.



THE WAR PENNIES

Changing of the alloys in U. S. Coinage is not new. The most significant change of recent times was the minting of zinc-coated steel cents by the Bureau of The Mint during the year 1943.

The zinc-cpated one-cent pieces came into being because of the need for copper for shell casings, electric wiring and other critical items during the second World War. Our arms plants were faced with a serious shutdown. Because of this the War Production Board withdrew the Mint's allotment of copper. The order went out to sharply curtail the use of copper at the mint and to seek out a suitable substitute. It was at this time that the mint first considered the use of zinc, plastic and aluminum in the making of coins. Since aluminum was also a high priority metal it was quickly discarded as a possible substitute.

Finally a one-cent piece of low carbon steel was selected. Steel, however, presented a great problem since it was very highly susceptible to rust. Electroplating would prevent this but the mint did not have facilities for electroplating. Finally an alternate solution was proposed and approved by the then Secretary of the Treasury, Henry Morgenthau and Donald Nelson, Chairman of the War Production Board, after Congress had passed permissive legislation in December, 1942. The solution was to use the low carbon steel and have it coated in someother manner with the zinc.

Outside firms were contacted and were able to produce the required material. To eliminate the electroplating process an alternate solution was devised in which the steel was rolled to the desired thickness and a sheet of zinc, tissue thin at .005 in., was "pressed" onto the steel. The cutting action of the punch press forced some of the zinc coating around the edges of the planchet and the upset process was successful in distributing this protection around the rim.

The added pressure of the strike helped to additionally bond the two metals togeather while the zinc coating acted as a cushion to protect the dies from excessive wear by contact with the steel.

The mint did incounter a great deal of trouble with filled dies from improperly bonded zinc and it is reported that presses were halted at frequent intervals to clean dies.

A total of 1,093,838,670 zinc-coated cents were struck beginning in February 1943, by a combination of all three mints.

The public did not react too favorably to the new cents. This was mainly because the new shi ny pieces were too easily mistaken for dimes. Since 1945 the Mint has been withdrawing these zinc-coated cents from circulation. The last figure we have been able to obtain on the amount that have been removed is dated June, 1963 and states that some 162,535,147 pieces have been recovered. Since they are very rarely seen in circulation today it would seem that the majority of them are in the hands of collectors.

During the year 1943 the metallurgists at the Bureau of the Mint were not idle. With the cooperation of the War Production Board, they perfected methods of combining material salvaged from expended shell cases with a relatively small portion of virgin copper and closely approximate the bronze cents of the pre-war requirements.

These small arms cartridge cases were recovered by military personnel from proving grounds, firing ranges and other troop training grounds and installations. The cases consisted of 70%copper and 30% zinc. When melted down with the added virgin copper it brought the copper content of our coins up to 85 to 90%. These "shell case" copper cents were minted in 1944 aand 1945 after which time the Mint returned to the bronze pre-war cent. This bronze pre-war cent consisted of 95% copper and 5% zinc and tin as was required by an act of congress. The tin used was approximately 1% of the zinc tin or 1/10th of 1% of the total alloy.

On May 23, 1962, Miss Eva Adams, Director of the Mint, appeared before a sub-committee of the House Banking and Currency Committee in regards to Bill H.R. 11310 which requested the removal of tin from the requirements. Miss Adams pointed out that the use of tin was purely historical since what we now call bronze was formerly a copper tin alloy and that a great savings could be accomplished by its removal. Since no tin is manufactured in the U.S. it must be imported and in the preceeding year 17,200 pounds of tin were used at the mint at a cost of $1.16 per pound. Compared with the present price of 12¢ per pound for zinc a savings of twenty thousand dollars could be foreseen in the following year,

On September 5, 1962 Congress enacted this bill into law and beginning with the year 1963 tin was removed as an alloy in the manufacture of our coins.

THE RIPPLED CENTS

The "rippled" cents have caused a great deal of controversy, experimentation, and consultation throughout the Numismatic Error Field. Common sense tells us that if we are able to find "rippled" cents in circulation, that there is an aura of legitimacy around them and that they were made inadvertantly and not fabricated for profit. In early 1964 a great deal of research and experimentation was done by Arnold Margolis in an effort to come up with a logical explanation of this particular coin.

Beginners, intrigued with the appearance of a collection of uncirculated coins often try to polish or "shine up" their collections in an effort to duplicate these uncirculated sets, before they realize that polishing decreases the value of their coins.

Most everyone knows that a jeweler polishes metal with a buffing wheel. These are not readily available to the novice, but an alternative comes to mind. The wire brush wheels used by the local gas station, or do-it-yourself home workshop enthusiasts, appear to be a ready substitute. Our novice receives permission and starts to buff up his coins on the wire wheel. They quickly get too hot to handle and a device such as a plier is used to hold them.

After he finishes, he examines his coins. Those which got excessively hot have developed a ripple pattern all over them which looked much like the ripples created on a still surface after a rock has been thrown into it.. They are funny looking, and not attractive for his collection, so our novice pockets them to be used as "spending money". These coins eventually find their way into circulation and sooner or later they are found by collectors who then believe that because they are found in circulation, that they are not fraudulent.

A little experimentation with almost any brand or type of wire brush wheel will convince you that this is easily reporduced. In fact with a little practice you can create all sorts of ripple patterns on coins. We do not recommend this since altering of U.S. coins is forbidden. However if you have some minor foreign coins, it will work equally well with them.

This does not mean that the Mint does not produce rippled cents to a certain degree. A local concern that dies die stamping was kind enough to demonstrate how ripples can be caused around a design by excessive pressure, but the ripples did not cover the entire surface. Some Mint-made coins have been found with ripples around the outline of the design only. This is most prevelant in nickel coins, for some reason involving metal hardness. In experiments this type was not reproduced.

Some claim that rippled coins can be made with an electric or acetylene torch. This may be true, but does not explain the amount of them in circulation. Arnie's theory does.

To be more analytical and scientific, it would be in order to attempt to verify the existence of BU specimens. If one were to be found in the contents of a Mint Sewn bag of coins, and verified as a Mint product, these theories would be considered disproved. To date, absolutely no such specimens have been discovered. In early 1964, much publicity to this matter was given in The Penny. No BU rippled coins were ever produced by anyone in the error collecting hobby. Until such an event occurs, we must stick with the theory as outlined in this paper.

MULTI-MINT MARKS

This is probably the most difficult item to write on of any of our mint error classifications. The reason for this is that the Mint has constantly refused to divulge the actual process used. The information we have from the Mint as to the placing of mint marks on dies is this:

"All Mint Marks are punched into the dies, by hand, by the Chief engraver in Philadelphia."

From this information, we know that the actual pressure or force used to impress the mint mark is a blow from a mallet or small hammer of some type. We also know that a letter punch is used, and that the mint marks for all mints are placed on the dies in Philadelphia.

Logic will tell us that the "misplaced" or mispunched mint mark is the exception rather than the rule. Although there are no specific requirements as to the actual point where the mint mark is to be placed (so says the Mint), we find that the "normal" position is centered between the first two and the last two numbers of the date and an equal distance from the tail of the 9 and the front of the bust. Knowing the high degree of accuracy with which this norm is accomplished, we can not help but believe that some sort of a jig or form is used, having a slot for the punch to be inserted that will hold the die in the same position each time and allow the punch to strike it in the same location.

We know that using 50 to 150 tons of pressure, it requires from three to five entries to properly impress the design from the hub die to the working die. By the same reasoning, we must assume that it could require an equal amount of impressions of the same pressure to properly impr ess a mint mark into a die, or one impression of much greater pressure. Since we do have indications of multi punched mint marks, and some show very faintly, it would indicate that one punch (blow) is not sufficient.

Since in this device or jig that we assume, there must be some sort of locking device to hold it in place. We feel that slippage between impressions of the punch can indeed account for the evidence that all punches were not made in the same exact location. By the same token, the slot which receives the punch could itself become worn to the extent that it could allow the punch to turn and move to a slight degree.

This type of doubling should not be confused with a doubling which occurs during the striking of the coin. If the parts of the date are doubled in the same direction as the mint mark, in identical fashion, this is indeed a striking error. It can not be a die error since the mint mark is placed on after the die is made, and the probabilities of a doubling of the mint mark to exactly coincide with a re-entry doubling on the die would be fantastic.

It takes a sharp eye to detect multi-mint mark coins and they should always be verified with a strong glass from all four directions, to avoid being tricked by shadow and light.

THE 1955 DOUBLED DIE CENT

This coin has become popular because it is an easily seen and readily recognized Mint Error. It is a product of incorrect die preparation and is not as is commonly mistaken, a double struck coin. It was made from one strike of the press, as opposed to multiply struck coins with multiple impressions on the obverse and reverse. This coin has a perfect reverse (with no multiple impressions) and a multiple impression obverse.

A review of the NECA Glossary Forward, at the bottom of page F-2 and the top of page F-3 will refresh the way in which dies are made from the master hub. The basis of the operation is repeated impressments to make a deep and sharp enough indented impression in the die. Because the die steel hardens when it is compressed by the pressure, it is necessary to anneal (soften) the die steel in between impressions on the master hub. In the case of this coin, the mint worker who was entrusted with making the repeated impressions made a mistake in that he did not align the die onto the hub properly. Thus the resultant impression was not superimposed on the previous impression on the die, but rotated about 10%.

When the die was made, the mistake was either not spotted, or else the mint worker entrusted with this task thought he could hide the mistake by putting the die on the shelf and "lose" it among the rest of the dies waiting to be used on the regular production line.

Somehow, the mistake was not caught, and the die eventually found its way into a press. The press was permitted to operate for almost a full (8 hour) day before the oddly made cents were noticed. The presses in those days were of the kind which held two sets of dies at once. In every down stroke, two cents were struck at once. Therefore at the end of the day's work, one half of the output of the press was normal and the other half was the doubled die cents. It was decided by "the powers that be" at the mint, that the batch of coins would be issued, and not sent back for melting. No notice was taken of the oddity.

For over five years this oddity was well known by coin colectors who considered it merely a curiosity. It was available for very minimal prices (25¢ was average) and was readily found in circulation in the New England and New York areas where they were released through the Boston and New York Federal Reserve Banks in the normal courses of commerce. In the early 1960's when Whitman decided to make a hole for it in their coin boards, it became essential to own one so that every hole in a set of cents would be filled. After that it became a much desired coin and its market value increased phenomenally.

In recent years, the coin has become so valuable that it has become fair game for counterfeiters. It is not possible to alter a normal 1955 cent to look like the doubled die cent. Its appearance is too distinctive. However there have been attempts made, using every process known to the coinage art, castings, impact dies, spark erosion, engraving, and other techniques to create credible duplicates which could fool the expert collector.

(more)

Recently, (early 1966) the New York City area was flooded with a large supply of fraudulent 1955 doubled die cents. These coins were made by the use of dies prepared by the impact process. In this process, a legitimate 1955 doubled die cent is placed against a softened piece of die steel. By means of an explosive charge similar to that of a blank gun cartridge, the cent is driven into the steel and thus, the steel receives an impression of the cent's image. The steel is them hardened and can then be used as a die to strike more coins with this impression. Of course the cent used in this method is not a survivor, and is ruined beyond use, but the resultant die can be worth much to the counterfeiter. Coin dies made by this process, from another coin usually have softened outlines and lack the sharpness and crispness we have learned to expect in well struck coins. The grade of the resultant coin is entirely dependent upon the coin from which the die was made. In other words, if the original coin was a grade XF, then the final products of the die would all never exceed XF grade, with respect to their elements which show and determine the grade of a coin.

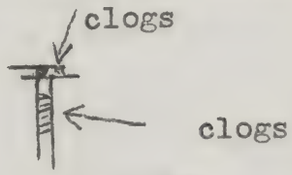
The particular coins recently released have one set of characteristics which make them readily identifiable, since they contain things not seen on legitimate coins. The fraudulent coins (of the current crop) are uniformly VF to XF grade, using Brown and Dunn standards. However, and this is important, all these coins have wire edges on the rims. A little bit of thought will bring to mind the fact that a wire rim is created by the pressure of the press which squeezes a slight bit of metal into the space between the collar and edge of the die. This metal becomes a sharp hair edge and is usually evident in extremely well struck cents and five cent pieces. The dimes, quarters and half dollars made with milled collars do not produce this wire edge readily. A proof cent usually has the characteristic high edge which we refer to as a wire edge.

Now in the coins in question, it is obvious that a wire edge is not possible in coins which grade VF to XF. This grade automatically means that the coin has received some degree of wear. Since the highest part of the cent (and most other coins) is the rim which is made that way to help protect the elements of the design of the coin and thus prolong its life, it would not be possible for a worn coin to retain its high rim for long. But since the wire edge DOES exist on these VF and XF coins, it means that unless a freak set of wear conditions occurred simultaneously on literally hundreds of coins at once, the only obvious answer is that the coins came out of a press with this appearance from the beginning. Hence, a worn coin with a wire edge rim can only mean that it was created in a high pressure press with a loose fitting collar around the dies, and that the dies were prepared from a VF to XF coin to start with.

There is one other tell-tale clue to look for in recognizing these fraudulent coins. On the next page we find two digrams. Since the doubled die cent has the word LIBERTY doubled, among other elements, we can find a simple check point in this word. We must remember that the U.S. Mint die is made from perfect hubs and has sharp and crisp detail. Even the improperly made die bore sharpness and clarity.

The counterfeit die, made from a worn coin, could not possibly have this detail. In the word LIBERTY, we have many elements which are closely spaced, especially in the letter T. The two digrams show this letter in the legitimate coin and the counterfeit coin.

Mint Made



Counterfeit

The letter T in the Mint-Made coin shows the cross bar and stem as two clearly separated letters. The counterfeit coin shows the stem and cross bar as blurred and muddled clogs.

Here we will stop elaborating on the various ways to identify these coins for one special reason. The NECA Glossary, being a form of educational medium, is the ideal way for a counterfeiter to learn how to improve his product. It is not our intention to tip all the flaws in the current crop of fraudulent 1955 doubled die cents, so that the next "run" can be improved enough to make a still more deceptive product for us to contend with. However, the NECA Authentication Service is aware of these additional flaws and is able to apply these standards to the authentication of such coins.

In time, when the creators of these coins are out of business, we will reveal in these pages, the rest of the mimor eccentricities which make these fraudulent coins identifiable so readily.

A new gambit recently tried to help create an aura of authenticity has been to intentionally release fraudulent coins into circulation so that they could be "found". This finding of a coin in circulation implies that the coin has to be genuine because it was found at random. By creating this implication, the perpetrators can then cause the collector to believe that since the coin was found in circulation that it is a mint made product and hence genuine. He is then more inclined to buy such coins from sellers, thinking that they (the coins) are legitimate. From the standpoint of the seller, the few coins permitted to get into circulation are an investment well spent in helping to create an air of legitimacy around the coins he wishes to sell.

The moral for the collector and potential buyer is to know your coins well enough to make your own decisions about them and not rely on the statements of sellers in advertisements or surreptitious word of mouth. These pages are intended to help the collector to learn these techniques and facets of knowledge for this purpose.

Arnie Margolis

THE 1954-SJ LINCOLN CENT

Syd Kass

This is an example of the fun and enjoyment that one can have while studying and researching a well known error. The 1954-SJ Lincoln Cent is probably one of the most popular die break coins known today. Examples of this error are sought by the standard collector as well as the error collector.

This coin is often referred to as the "San Jose Mint Cent", appropriately named by the preson from the San Fransisco Bay Area who named it after one of the larger cities in this California area, San Jose.

In reality, the "J" is a die break starting at the lower tip of the "5" in the date and extending downward with a curve to the left, resembling the letter "J" and touching the "S" mint mark. On better examples of this break, the lower curvature appears to be a double parallel break. It is actually believed by some that the "J" is formed by two parallel breaks.

The die breaks appear on the coin as raised metal, which assumes these shapes and tend to look like the numerals and mint mark, in g eneral appearance. It almost looks as if the Mint intentionally put a "J" at that point on the coin. That is how realistic it is.

For furthur information on how to differentiate between a die break or crack and a coin where metal was scratched and gouged, giving a similar impression, we suggest that you refer to NECA #7 in the NECA Glossary. Here you have a detailed account of how to differentiate between true mint errors and circulation damage which may be quite deceptive in coins of this kind.

In recent study, three distinctive types were noted with the possibility of a fourth type. However, due to the limited supply of the fourth type available for examination, it can not definitely be established at the time of this writing that a fourth type actually does exist. The following determinations have been noted:

TYPE ONE
- (a) Die Break from tail of 5 to base of "S" causing the "SJ" mint mark.

TYPE TWO (caused by additional deterioration of the reverse die when it chipped between the second and third right kernals of the right wheat)
- (a) Die break from tail of 5 to the base of "S" causing the "SJ" mint mark.
- (b) Die chip between second and third right kernals of right wheat stalk.

TYPE THREE (later on, the obverse die chipped at the 9)
- (a) Die break from tail of 5 to base of "S" causing the "SJ" Mint mark.
- (b) Die chip between second and third rig ht kernals of the right wheat stalk.
- (c) Die chip on tail of 9 to top of mint mark.

TYPE FOUR (filled reverse die caused this type)

9(a) Die chip from tail of 5 to base of "S" causing the "SJ" mint mark.
(b) Die chip between second and third right kernals of the right wheat stalk.
(c) Die chip on tail of 9 to top of mint mark.
(d) Filled reverse die causing obliteration of portions of the words "ONE CENT".

This shows how the deterioration and the chipping of the working dies can cause the variations found in errors. Sometimes there is only one set of dies involved. At other times it could involve several dies. It is only through research and the matching of the various defects that it can be determined how many dies are involved. In the case of the 1954-SJ Lincoln Cent only one obverse die and one reverse die were used.

In addition to the major variations mentioned above, the following minor items have been noted on ALL 1954-SJ cents:

(1) All 1954-SJ cents came from the same obverse and reverse dies.
(2) The elongated "4" of the date was an original defect probably caused during the making of the die from the hub, a shifting of the tail and leg of the "4".
(3) The shift of all letters in "TRUST" toward the rim was also caused at the same time as the elongated "4".
(4) The crack on the shoulder above "VDB" was the first item of deterioration to occur on this obverse die.
(5) The die break causing the "SJ" was probably next.
(6) The knee on the tail of the 9 was the next item of deterioration and this progressed to the TYPE THREE variety.
(7) Now, somewhere between (5) and (6) above, we had the defect on the reverse die occur. This was the die chip which caused extra metal on the lower right wheat stalk.
(8) Double rim effect on obverse starting near the "G" in GOD and extending downward and around to the "4" in the date.
(9) Double rim effect on reverse starting near the "R" in PLURIBUS and extending downward around the right wheat stalk.
(10) Rim cud at 7 to 8 o'clock. (at point of the shoulder)
(11) Die crack from the point of the bust to the fill referred to in item (10).

At this time, it should be mentioned that all of the above 11 points may NOT be promonently noticeable on any one individual 1954-SJ cent. These determinations came from a study of a large supply of these coins.

It was also interesting to note at this time, that on some of the lower graded coins examined, these defect details were more prominent on the lower graded coins examined than on the better grades or even BU coins examined. It appeared that the better the strike, the better or more prominent the defects, regardless of the condition of the coin.

Therefore, do not expect all the eleven defects to appear on any single specimen of your coins, other than the defects to determine whether it is Type One, Two, Three, or Four. (It depends at what point of die deterioration your coin was struck).

In conclusion, it may be said that no furthur deterioration of this set of dies is known, other than those noted, prior to its removal from service. It is assumed by experts and students of the "SJ" research group that ALL the "SJ" die break cents came from one particular set of obverse and reverse dies, with the successive types coming from progressive die deterioration.

For assistance in the examination of large quantities of the 1954-SJ cents, I wish to thank the following individuals who made this study possible:
Addie Tieman, Lee Messinger, Mort Goodman, Emil DiBella, Jack Sams, James Draheim, Harry Parshall, and others.

More About the Sandwich Coins

(With stress on detecting fraudulent practices in "split planchets")

The November 1, 1966 NECA Errorscope carried a warning about how clad coins were being split into their component layers by a heat process, and then offered for sale as mint errors. This paper will more comprehensively treat this subject and go into the ways for detecting these frauds. For this treatment, all references are made to the cupro-nickel clad coins only and the Kennedy Halves are not involved in the discussions which consider these frauds.

The clad coins, the dimes of 1965 and later, and the quarters of 1965 and later are made of two layers of cupro nickel which cover a pur e copper core. A detailed treatment of the origin of these coins can be found in the NECA Glossary page "NECA 6" entitled "The New Sandwich Coins". The two outer layers are made of the same alloy as is used in the U.S. five cent piece, and are composed of 25% nickel and 75% copper. The center core is pure copper metal. When these layers are joined, they are bonded in an explosive process which pounds the three layers together so violently, that the surfaces adhere due to molecular interlinking. If you can picture how a thistle clings to your clothes, you can imagine the surface molecules of each layer clinging to each other after having been forced together. It is most important to note that they are not joined electrically (welding), or melted together in any way. The process is a patented, and rather complex manufacturing technique which was adopted because of many other considerations.

When the coin is struck, it seems that these adhesions are strained by the forced movement created by the pressures of the dies. The surface metal moves into the depressed places in the die, and the under metal moves to fill the voids. Depending upon the coin's design, (Washington's head, Eagle, Torch, Roosevelt head, etc.), the amount of movement is greater or smaller in different areas of the planchet during striking.

Since the cupro-nickel alloy is much harder (because it contains nickel, a very hard metal), its action with the pure copper core (which is very soft metal) is similar to the effect of a pie crust over a soft filling. The crust, (cupro-nickel layers) tends to move independently of the filler (copper core), and during striking, the tendency is very great for many of the bonded areas to tear apart.

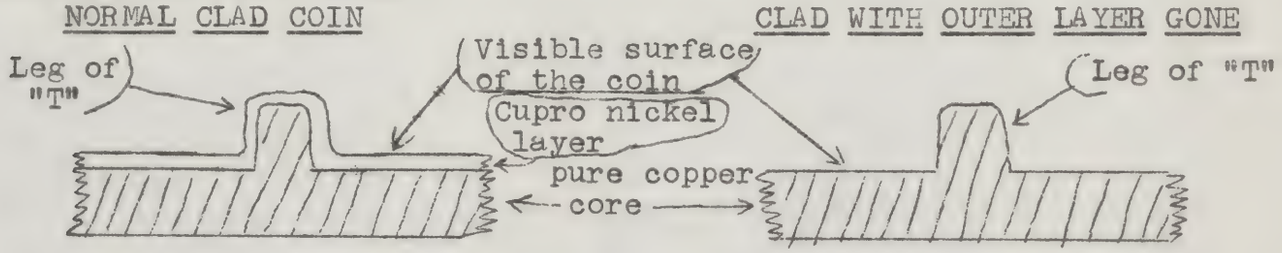
On the other hand, the crimping effect of the dies at places of great detail, such as lettering, and the action of the collar in impressing the reeded edge helps to counteract the separating action caused by these stresses. They tend to help to crimp the outer layers to the core so that they are fastened together still more completely.

However, in a case where the bonds of the outer layer are broken away from the copper core over most of the coin, a sharp blow from anything (such as dropping of a bag of coins, or tamping a roll of coin, or any similar impact) can split the remaining adhesions and remove the outer layer from the core easily. Please understand that this is not a normal occurrence, but has happened sufficiently to permit this analysis to take place.

A planchet which has had the outer layer split off after striking has a number of distinctive characteristics which are considerably different from what we have learned to expect from split or laminated planchets of past years. Upon seeing one for the first time, the immediate impression is that we have a coin which was struck on copper.

The surface is almost proof-like smooth, and the impression of the design is sharp and clear. There is almost no hint of it having been a split planchet which once had an additional layer covering it. Upon closer examination we find a number of very unusual things. That is, unusual, based upon what we have grown to expect from our past knowledge of coins. A careful examination under a good glass will reveal a few small silvery discolorations in random locations. These are the points at which the bonding had held, and was later broken by some blow or sharp impact which caused the split. In all legitimate split clad coins examined to date, these areas have invariably been found. They are usually small areas, ranging in size from dots the size of the dots on both sides of "ONE DIME" on the dime, to areas no bigger that the "O" in OF on the dime. In addition, one extremely obvious characteristic is a vety accurate authentication check point. In every case where an outer layer splits away from a clad coin, ALL LETTERING AND DESIGNS LEFT ON THE COPPER CORE WILL BE SMALLER THAN ON A NORMAL COIN.

This is easy to understand if you examine the diagram which is intended to represent a cross section of the leg of the letter "T" as found on any clad coin.



When the coin is struck, the outer layer acts as a "lining" and the copper center will receive a smaller version of the design of the die. Therefore when the cupro-nickel layer is removed, the details will naturally be smaller in every dimension, to the extent of the thickness of the outer layer metal. In practice the "feel" of the outer layer is about the thickness of heavy duty aluminum kitchen foil. Therefore the difference in design thicknesses may not seem important at first. But when a normal coin is held next to one with the outer layer missing, the differences are very obvious, and almost impossible to not see easil with moderate magnification.

Since we have had a number of phony split planchets appear, we can discuss the key differences to watch for and the main identifying characteristics of each kind, legitimate and fraudulent. The phony one is made by heating a clad coin red hot. The differences in the rates of expansion between the copper core and the cupro-nickel layers cause stresses which break the bonding. This makes it easy to mechanically separate the layers and "create" split planchets. This is definitely considered fraudulent alteration of a coin and is not recommended even on an experimental basis.

Check List of Characteristics of Split Clad Coins, real and fake.

LEGITIMATE MINT ERRORS	HEAT TREATED FRAUDS
COLOR. Uniform copper color, tending to lean towards a maroon, rather than the conventional "BU" brightness associated with new copper cents	Rosy color due to bleaching process created by the need to clean the darkened surfaces made by the extreme heats used to make them.
TEXTURE. Smooth- almost proof-like in the sheen of the surface. No roughness except in the tiny spots where the bonding broke away.	Rough and coarse due to the breaking of many bonded areas by heat, and "tearing". Also the cleaning chemicals may create a porpus surface.
GENERAL APPEARANCE Crisp, sharp and clean impressions with extreme clarity. All design details slightly smaller in all dimensions.	Generally dull and poorly defined outlines of all designs. Looks like a conventionally known "poor strike".

General Considerations.

The weight of a missing layer split planchet will be less than that of a normal clad coin by the weight of the clad layer that is missing. Normal weights for clad coins with cupro-nickel layers are:

Quarters: 35 grains
Dimes : 87.5 grains

A missing layer in dimes or quarters will amount to a weight reduction of about one sixth for each layer.

As of this writing, our experience has been limited to split dimes and quarters. We have not examined or heard of authenticated split layer clad halves. As this information is made available it will be issued promptly.

The accepted considerations for mint errors of past years in copper cents, cupro-nickel five cent pieces and the silver coinage do not always apply in the clad coins. In the older coins we expect to see granular, rough, and striated surfaces in laminated planchets. In fact, we try t o authenticate them, using these features as check points. In the clad coinage, these pre-conceived ideas must be discarded in favor of new concepts and ideas based upon the use of wholly new combinations of metals and techniques for making the planchets. Therefore, the new, and unfamiliar experiences are not to be looked upon as "wrong" but rather as becoming acquainted with a new technology. These coins bring with them a new category and look to mint errors. This paper has discussed only one of the new phenomenons. There are naturally more which we will come across as time passes.

Arnold Margolis

THE ART OF DISPLAYING

Just in time for the ERROR-A-Rama, we have received permission from Margo Russell, Editor of Coin World, to reprint their series on "The Exhibit Judges' Forum" held at the recent ANA Convention in Chicago. This, in our opinion, is one of the finest series of informative articles on the art of displaying that has yet been produced.

We cover here, in the first six pages, two of the more important aspects of exhibiting, Information and Arrangements. Others in this series will be printed for you in future pages. The first article in this series, although not a part of the Judges' Forum, is a reprint from the February 9, 1966 article from Coin World that deals with the method of judging that has been adopted by our exhibit committee for the Error-A-Rama. This article, by Mrs. Sylvia Haffner of San Diego, shows a great deal of foresight and intelligent thinking and we feel you will concur with us that this method of judging is by far the best put forth yet.

Informative Exhibits Best Method For Advancing Numismatic Education

Laws become obsolete, fashions become outmoded, and our exhibit rules have become archaic! As an enthusiastic exhibitor, I have felt many times that not enough consideration and emphasis was given to the exhibitor and the exhibit. Many numismatic conventions have costly and elaborate banquets with lavish entertainment, with only about 10 per cent of the convention registrants attending. Much planning and work goes into this banquet, and the budget is usually triple the budget of the exhibit chairman, yet the object of any numismatic convention is to further the EDUCATIONAL PROPERTIES of numismatics. This can best be accomplished through the informative exhibit, viewed by ALL of the registrants.

If you want better exhibits and more exhibits, give the exhibitor a chance to win an award based on the merits of his workmanship; not based on a lottery of which category has the least competition!

After every convention, there will be exhibitors who will complain that the judges were biased, uninformed and idiots, and that the exhibit chairman was either inefficient or corrupt. They will threaten all who care to listen that, "they will never exhibit again". This dissatisfaction among the "losers" has created a problem in obtaining qualified judges and efficient exhibit chairmen. The exhibit rules that shall be proposed here have been tried and tested in California at the annual Coinarama in San Diego for the past three years, at the International Convention in Los Angeles for the past two years, and at the 37th semi-annual Convention of the California State Numismatic Association.

As an exhibit chairman of the CSNA event, it was my pleasure to introduce the point system of judging to the CSNA on a trial basis. It was at this convention that we became aware of some of the "bugs" in the system. The format that shall be explained here is the revised procedure for judging on the point system.

Categories are eliminated under the point system — for judging. All exhibits are judged strictly on their own merits. A U. S. type set is not competing against all other U. S. entries, but against a possible score of 100 points. Under the obsolete category system, an exhibitor could receive a score of 93 points and still not place third, if there were exhibits in his category with scores of 96, 95 and 94; but if that same exhibit had been in another category where the highest score had been 86 . . . IT WOULD HAVE TAKEN A FIRST AWARD!! Should an exhibit with a score of 79 (for example) take a first award because there were only two or three exhibits in this category? Should an exhibit with a score of 93 receive no award because there were three exhibits in his category with higher scores.

Can this be explained logically to the layman who comes to view the exhibits and sees a first award trophy on an exhibit that merited only 79 points, with no award on a far superior exhibit with a score of 93 points?

This was the first convention for the CSNA without categories. YES . . . there were disgruntled exhibitors who threatened never to exhibit under these exhibit rules again! They preferred the categories to the point system, because they felt they had a better chance, but, there were far more contented exhibitors who received awards they EARNED.

An analysis was made of this convention, by processing each exhibit through the old categories. IF the point system had not been used, and the categories retained, the results would have been as follows:

Fourteen winners of awards on the point system would not have received them. Four of these 14 took a first award. These four first awards were all in one category.

Nine exhibitors who did not qualify for any award because of their low score would have won an award.

Three exhibitors who won third awards would have won first awards.

The U. S. category did not have one exhibit with a score high enough to take a first award.

Thirty per cent of the exhibits were in one category. Thirty-one per cent of these exhibits received awards, including five first awards. Under categories, one per cent of the exhibits would have received awards!

In one category, there was only one exhibit with a score of 76.

In another category, with four exhibits, the scores ranged from 71 to 87. Only one exhibit received an award. Under categories, two exhibits with scores of 73 and 74 would have received awards.

These simple statistics spell out plainly how unfair the category system can be.

There is one category that should remain and should be called a Division — that of the juniors. Not only should there be a Junior Division, but where there is a large age span between the participants, it should be broken down into two divisions — up to 12 years of age; and 13 to 17, for example. We

Guest Writer Offers Way To Improve Exhibit Rules

want to encourage our junior exhibitors as they are our future numismatists. They are judged on the point system along with the adults, but their card says junior on it and the judges are therefore aware and judge accordingly, as too low a score is a discouraging factor to the children. We had seven junior participants and gave a first, second and third award, as well as a small participation trophy to each entrant. Those who did not win awards did not go home empty-handed. In fact, at all San Diego Coinaramas, all exhibitors receive a participation award as a remembrance of the Convention.

The following four classes of judging are recommended:

A. Numismatic information that can be obtained from viewing the Exhibit, 40 points.

B. Effectiveness in relating information to material, neatness and eye appeal, 30 points.

C. Completeness of subject and related material, 20 points.

D. Relative condition of material displayed, 10 points.

We give no points for rarity, such as the ANA. We feel that extra points should not be given to a collector because he can afford to own a $4 Stella. With this rarity class, an excellent exhibit which qualified for top score in information, effectiveness, completeness and choice condition of material could come up with a total score of 95 points, and still never win a BEST OF SHOW, because of the five points reserved for rarity. After all, there are degrees of rarity not to be measured in cost! If you had $10,000, you could buy a $4 Stella, but did you ever try to find a twenty-cent piece from Hong Kong of Edward VII in choice condition; or a twenty-five centavos issued in 1929 from Nicaragua in choice condition; or a one-quarter cent 1904 from Ceylon? Who is qualified to judge which is rarer?

The collector with the fabulous, rare and expensive specimens should be invited on an invitational basis, given prime exhibit space, and rewarded with a special award for removing them from the vault and courageously transporting them to the convention center.

It has been suggested that all exhibits receiving 90 points or more, on the above scoring scale, receive a first award; 80 to 89, a second award, and 70 to 79, a third award. This is not feasible, as it would be impossible to know how many trophies to order. There is also the problem of judges who score high, and those who score low. You might wind up with 80 per cent of your exhibits in first place . . . or none!!

Our recommendation is as follows: — based on the number of exhibits entered, you plan on one-third of the entrants receiving awards. They are to be awarded based on the curve . . . the highest score receives the Best of Show; 10 first awards; ten second awards, and ten third awards. (This does not include the Junior awards.) This is based on 90 exhibits or less. We had 83 exhibits at the CSNA convention, and the cut - off worked as follows:

95 points, Best of Show; 93-87 points, first award, 10; 86-81 points, second award, 10; 80-79 points, third award, 10.

You will find that the cutoff does not always break evenly; although this was not the case at the CSNA, at the Coinarama last year, we gave 11 second awards instead of 10, because the cut-off came at 86 and there were two exhibits with the same score. I would rather see the purchase of more trophies for an award than to cut it down to nine winners at second and place the other two in third because then someone will be left out at the bottom of the curve for a third award. We usually arrange with the trophy house to have two extra for each place. Our only cost is the metal plate with the engraving when they are returned and the cost is nominal.

This is how it works — The exhibit chairman processes every exhibit entered, into an existing category if it qualifies. For example, a Japanese type set cannot qualify for a special award under the above mentioned categories. All qualifying exhibits are listed on one of the seven sheets kept individually.

When the point scoring has been tabulated, the scores are recorded opposite each exhibit competing. The highest score on the Canadian entrants will win Best of Canadian, regardless whether it won Best of Show, or it may have taken a third award; or it may not have won any award, BUT IT IS STILL THE BEST OF CANADIAN for that particular convention.

We do not award the trophy if there is no competition in a category. The ANA, with the perpetual categories honoring various numismatists could still keep their categories for the special awards and up-date their judging system to the point system. Under this system, an exhibitor could win several awards if he had an outstanding exhibit, and not be penalized because he selected a more popular field of numismatics to collect.

It is not necessary to eliminate categories for special awards. At the International Convention in Los Angeles, special awards by categories are presented by prominent numismatists and brokers who specialize in certain fields. We have given trophies for the following categories: Best of European, British Commonwealth, Medals, Canadian, Mexican, Gold, Ancient and Medieval, and we have four donors this year who wish to donate additional trophies in categories.

Arrangement, Originality Of Exhibit Help Scores

This article pertains to arrangement and originality of an exhibit. This talk was delivered by Mrs. Doris Martin, a member of the ANA exhibit rules committee who has been prominent in Texas numismatic activities for a number of years—Editor.

By Doris Martin

Before discussing the above topics, I would like to make this important point: We are spinning our wheels unless both the exhibitor and the judge have the same guiding information or the twain shall never meet. Let's not give the judge a detailed road map and leave the exhibitor to follow his nose—a sure way for him to lose.

Why have exhibits? Exhibits, as the showcase of our hobby, have many purposes Consider these: One, sharing our hobby with the noncollector-selling, if you please; two, sharing our particular interest with fellow collectors; three, widening our horizons - new interests, new viewpoints, different perspective; four, increasing our numismatic knowledge stimulating, us to further research, and five, inspiring and challenging us to greater numismatic heights. Of these, inspiration is the keynote.

What is an exhibit? An exhibit should be a "picture story" with captions. As with any good story, it must have a unifying theme. Keep this point in mind: You are picturing a theme not the entire book. Thus the numismatic material required will be considerably less but much more pertinent. As with a written theme, we all tend to get wordy. Edit your exhibit with an impersonal and critical eye. Does it really need all those items and do-dads?

But... do not sterilize or statisticize (just coined that word!) your picture story. Stark pictures and raw statistics have little appeal to most of us nor can they be soncidered inspirational. Coins sitting on typed information cards in an otherwise bare case will not have appeal. You might win the full quota of points for information and then lose all of them for the lack of originality and arrangement.

You will find arranging, viewing or judging exhibits more pleasurable and certainly far more enlightening if you will first ask and determine, "What does this exhibit set out to accomplish?" The title is a clue (I hope) but the theme is "read" through arrangement.

What about arrangement? An arrangement must have a purpose (the theme). A hodgepodge exhibit is like the amasser —no purpose, no core of interest, no beginning, no end. Since we are a society that reads from left to right, arrange your picture story in that manner. If more than one case is used, indicate the beginning case.

Each case may be likened to the chapters in a book or a small theme within the total theme. If they are not closely related you probably could break it up into more than one exhibit. Remember what we said about editing your exhibit. Just because you own Ft. Knox is no reason to put it all on display.

There are many collections within a larger collection. Each of these topical collections can make a different display. E.g. Architecture on coins, sutler tokens, historical medals, educational bills, etc.

Focal point is an important factor in arrangement. As with a painting or an artistic floral arrangement, your exhibit should have a center of interest. This should be the item or items that have the most dramatic impact in relation to your theme. It is not always the rarest, choicest or most costly item. Search within your theme for the highpoint of interest and feature it. "How?" you ask. There are many ways as there are individuals. Put it in a prominent position, use a spotlight, put it on a pedestal.

Clutter cannot be considered arrangement. This is usually caused by a lack of theme, a desire to include more than the case will accommodate. Again we repeat, edit critically.

Akin to clutter is the matter of placing items too near the edge of the case. Bear in mind that exhibit rooms are not always lighted adequately and items near edge and the corners will surely be at a disadvantage.

What is originality? The original consists in arranging the old anew. The most noteworthy is often reached by trial and error. Don't be hesitant about experimenting. First in your mind then with your materials. Adjust the means to the end. Study exhibits, take notes, adapt ideas and techniques to fit your theme. These are not copyrighted, you know. Above all, do not display the same exhibit over and over. It might have inspired once but that quality in lost through familiarity. (This is another reason why elaborate and expensive housings should be avoided.)

Originality in relation to exhibits should place emphasis on the arrangement and the arrangement should place emphasis on the numismatic items.

Numismatic Information Important In Exhibiting

By Maurice M. Gould

Coin World presents the first in a series of articles from the exhibit judges forum held at the recent American Numismatic Association Convention in Chicago.

The five speakers on the panel were Maurice M. Gould, Chestnut Hills, Mass.; Doris Martin, Houston, Texas; George D. Hatie Grosse Pointe, Mich.; Art Lovi, Pensacola, Fla., and Byron Johnson, Seattle, Wash.

The first article will pertain to numismatic information. This talk was delivered by Gould, who is past president of the New England Numismatic Association, fellow of the Royal Numismatic Society, author, lecturer and teacher of numismatics. — Editor.

I have been fortunate, over the years, to have participated in our hobby, both as an exhibitor and judge, and from my own experience, in spite of all the effort that it takes to make a top exhibit, judging is by far the more difficult of the two.

My subject this morning relates to numismatic information pertaining to exhibits, and in my opinion, this is one of the most important areas of the entire exhibit.

I have found that scoring of this category will average 25 to 35 points and naturally, one can see by this figure how important this category is.

One, it is very important to have everything legible, whether done by typewriter, printing, or other methods. Everything should be clear so it can easily be read, and the letters should be large enough so that the information can be readily seen at a glance.

Two, be sure that words are not misspelled and that the proper phraseology pertaining to the items is correctly used.

Three, it is quite important that a good, catchy title of one's exhibit, is prominently displayed.

Four, misinformation is occasionally found and this lowers the calibre of one's exhibit.

Five, the same applies to not enough information, as it is important to present a complete picture of what one is exhibiting.

Six, it is important to stick to the exhibit, which is mentioned in the title, and not veer off into many other phases of numismatics, having no bearing on the exhibit. A sequence of years or events should be properly followed.

Seven, research is quite important and always double check, as even authors are known to make errors, and numismatic information used 50 or 100 years ago, is sometimes found to be faulty.

From a judge's viewpoint it is important to:

One, have everything clearly legible so he will not have to spend any extra time deciphering the exhibit.

Two, the title is important, as a good one will immediately give him an extra interest in the items exhibited.

Three, usually, if one does not stick to his topic, the judge or judges will pick this up somewhere along the line and lose interest in the exhibit.

Four, not enough information drops an exhibit down considerably to a judge as he is trying to find out information about the material on display and thinks, "How would this appeal to the public and collector, who view it?"

Five, misinformation is one of the worst offenders as I have worked with learned judges who have come across incorrect statements or incorrect dates and have immediately dropped the exhibit down in their estimation.

Six, the last item I would like to mention and which I believe is extremely important—if you exhibit numismatic material, whether legitimate copy or replica, it should be correctly labelled.

The only reason to use counterfeits or forgeries would be when the exhibit is an educational one to show the difference between the genuine and the false, or to show a copy of a coin which could not be shown or owned, such as a unique piece, in museums, etc.

Consider the fresh viewpoint, the new approach to the theme, a new theme, the clever means devised to give flilip, the inspirational qualities that stir the viewer to higher achievement.

Consider this story of water. A stagnant pond cluttered with debris and covered with dirty film is water at its lowest level of appeal. Water flowing from the tap may be pure and life-giving but it has little inspirational value. A fountain splashing in the sun lifts our spirits but like the butterfly dies at sundown. A snowflake is water at its best. Inspirational in its beauty and wonderous in its endless and intriguing patterns. Yet each is water. Arrangement alone made the difference.

Exhibitors, take a lesson from the snowflake and concentrate on a fresh and inspirational arrangement rather than on an elaborate housing

What about housing? I am aware that the 1966 ANA exhibit information states, "...elaborate housing counts for nothing." If this is an effort to equalize the chance of being judged a winner, I agree. But let's not forget that packaging sells the product. If you are a competitive exhibitor, you are out to sell!

Taking it from another angle, it is impossible to view a picture without taking into account the frame. You may not be aware of doing this if the whole effect is pleasing. As with you, the judges will unconsciously respond favorably or unfavorably to the total effect. With this in mind, let's consider the housing or case as a frame for your numismatic picture story. You should know the color and material of the case you will use and plan accordingly. If you are making your own housing, consider your arrangement and be sure the case does not overpower the display.

Case frames can be made more harmonious by covering them with plastic tape. This comes in many colors and varied widths. This tape goes on easily and comes off with no damage to the case. I speak from personal experience.

Deep cases tend to detract from an exhibit. It is no trick to raise the display within the case. Use blocks of styrofoam of proper height. On this place a heavy cardboard cut to inside case measurements and covered with your background material.

A forward tilting of the case or the arrangement makes for greater ease of viewing. If your background material will allow it, jewelers' pins may be used to anchor coins against possible slipping. Just one at the bottom of each coin is sufficient. These are used to arrange elegant show windows. Why not borrow the trick?

There is a non-greasy material that can be used to anchor coins. The type I've used is called "Plastic Goo". It is guaranteed not to damage any surface. (Don't use modeling clay. It will leave a greasy spot.) If you can't find this Plastic Goo, write to Doenges Supply Co, Box 121, Guthrie. Okla. (No, I do not have any interest in the company. Just an interest in helping my fellow exhibitor.)

While on the subject of cases, dimensions are necessary information. Exhibit chairmen should include these when preparing exhibit information. This should include INSIDE measurements of cases you will furnish: Width, length, depth Please don't guess. The exhibitor is relying on this information when cutting his background material and layout of exhibit. It would be thoughtful if you would include information about the type, width, and color of case frames.

Is eye appeal personal? Yes. However there are some factors that appeal to each of us. Concentrate on them.

Neatness is essential to eye appeal and to clarity of theme. As a reminder: One, clutter, haphazard arrangement or items askew will not appeal to anybody.

Two, cleanliness is a major factor in neatness and artistic appeal. Case glass must be spotless inside and out. (Better bring your own cleaner just in case.) Smudged typing and unpressed or soiled background material are unattractive.

Three, finger printed coins are not desirable But I hasten to add that I am not suggesting that you clean your coins. That is a subject out of my ken.

Color is abundantly used in nature. Here's your clue but be selective. Ponder these: One, which color will show the numismatic items to best advantage? Take some items to a fabric or art supply shop and actually try placing them on the material you feel is best suited for your background. You'll be amazed!

Two, does the color and texture of material reflect the period and/or condition of your numismatic items?

Some items just don't belong on velvet. Materials of high sheen or bright metallics are not a wise choice for any exhibit. They detract from the items.

Three, is the color suitable to use where lighting may not be as bright as desired?

Four, does the color and texture of the material "go" with the theme? It hardly seems appropriate to use the same color and type of material with a display of love tokens that you would use with war medals.

Five, should color combinations be used? Monotones with a bit of accent are safer choices than contrasts. Yet contrasts lend interest and accent. Go ahead and experiment but no doubt it will be wiser to avoid bizarre effects. Let's not jar the judges!

Numismatic information, to my notion, is the most difficult element in relation to arrangement and eye appeal. How to incorporate the essential and desired information without having it detract from the numismatic items and general attractiveness requires the utmost ingenuity.

Doris Martin Suggests Five Steps For Neatness

By Doris Martin

You have been given excellent advice and guiding principles. We emphasize these: One, type or print neatly. Use at least pica size (12 point) type and a new ribbon.

Two, count the letter in each line and make even right hand margins. This takes time and effort but the neat results are worth it.

Three, colored type can enhance the over-all appearance if chosen with an eye for readability and color harmony.

Four, letter form and paper should be in keeping with the numismatic items and theme. Modern plastic letters are not in tune with ancient coins. A visit to a large artist's supply house will acquaint you with many new aids to lettering. The new transfers are wonders. I've used one type to sign my name on this paper.

Five, typing material should blend with your background color. Information is needed but should not be the outstanding item in the exhibit. I've seen typing on ribbon, on rice paper, on material, on the background itself and the raised paste-on lettering made with the modern labeler.

Accoutrements — what's that? Whether you spell it 'accoutrements' or 'accouterments' matters not. The very word should cause you to shy away. And well you should. You could get trapped in the trappings!

Keep uppermost in your mind the basic purpose of the exhibit room—a display of numismatic materials. They are the main attraction. We agree that these trappings are effective "attention getters". But like the ballyhoo at the side show, they are not the main attraction.

A few artifacts that relate to the numismatic items and have a positive bearing on the development of the theme may have a legitimate reason for being included. However, I am firm in my opinion that these should be placed within the case and their relationship be definitely established.

Flags, statues, whirling globes, push button lighting and what-have-you adorning the exterior are part of the "elaborate housing" the judges are asked to ignore. And who can say, these trappings could create a negative reaction. Are they worth the chance?

An exhibit is more pleasing when the items are not in commercial holders. Yes, this means handling each item separately, takes more time but is worth it.

Secure items that are easily shifted. Cases are leaned on and bumped and sometimes have to be moved by the exhibit committee.

To speed placements at the show: Prepare a simple diagram of each case, put items in coin box in order of placement, stack information cards and labels in proper order, roll background material on paper tube to prevent wrinkles and bring along scissors, scotch tape, jewelers' pins, plastic goo, cleaner, etc.

Check your display just before judging time. Clean smudges off glass and get permission to arrange any items that might have shifted.

I shall always remember the thoughtfulness shown by an exhibit chairman at one of the fine Indiana State Conventions. When he noticed items askew he searched for the exhibitors and let them arrange things before judging time. That's real Hoosier hospitality!

Remember the cause of your failure to win exhibit honors may be that you have tried to find THE system. There is no such thing. Nor can any one thing make for success. It takes the merging of many things.

Your misfortune is not in losing, but in failure to profit from the experience; from failure to persevere. The surest way NOT to fail is to DETERMINE to win. If I've made sense, nothing more need be said. If not, nothing more should be said.

THE CLIPPED PLANCHET - AN OPPOSITE LOOK

By BLAKESLEY

INTRODUCTION

This is a technical report of theoretical and experimental research which presents new information to aid in authentication of clipped planchets. This new information applies to round coins from any Mint in the world which uses upsetting mills as described and strikes its coins within closed collars.

The research, started in 1963, was prompted by the scarcity of reference information available which was directly useful in authenticating clipped planchets, and by my observation that such information as was available focused attention on the clipped area.

The objective of this research was to determine whether or not a normally struck clipped planchet coin has identifiable characteristics in areas other than the clipped area which are a consequence of the clip.

SCOPE OF THE REPORT

This report concerns itself with the round clipped planchet, and only the single clip is discussed.

Description of the coining process is limited to those parts necessary for technical discussion or desirable for report continuity.

Sketches are prepared to illustrate particular points in this report. They are not to scale and are not intended to depict the actual configuration of the Mint items.

DISCUSSION AND RESULTS

Theoretical Research

In view of the various operations that take place during the coining process it seemed questionable to me that such an abnormal planchet could go through all the operations that a normal planchet goes through and have only the clipped area of the coin be affected. In an effort to find out whether or not a clipped planchet could be affected in other areas a theoretical analysis was made of its progress through the coining process from blanking operation to ejection of the completed coin from the press.

The results of this analysis indicated that during the upsetting operation there should be produced an identifiable and characteristic bulge along that part of the planchet opposite the clipped area. Furthermore such a bulge could cause the edge and rim opposite the clip on a struck coin to have an appearance different from the edge and rim elsewhere on that coin. Examination of a second process blank clipped planchet and several clipped planchet coins indicated the results of my theoretical analysis were valid so I decided to undertake some experimental research to verify these results.

Experimental Research

It seemed that a relatively small sample of about 50 coins should be sufficient for identification and verification of the characteristics to look for in the area opposite the clip so I stopped counting them after 50 were examined. Although most were Jefferson nickels, several Lincoln cents and Roosevelt dimes were included. The obverse, reverse, and edge of the area opposite the clip were examined using various magnifiers ranging from a 10X glass to a 50X stereo microscope.

The progress of a planchet through those steps of the coining process significant to this report is presented and selected points discussed.

1. A planchet is at its largest diameter at completion of the blanking operation. It is referred to as a first process blank planchet.

2. The upsetting mill, in producing the upset edge, reduces the planchet to its smallest diameter. It is now referred to as a second process blank planchet.

3. As a normal planchet is rolled through the upsetting mill it is compressed at two diametrical points at any given time. Consequently the planchet is still round at completion of the operation.

4. As a clipped planchet, Figures 1 and 2, is rolled through the upsetting mill, Figure 3, it also is compressed at two diametrical points at any given time until the clipped area is exposed to the roller or to the stationary fixture opposite the roller. When this occurs there is less metal available to be compressed, because the planchet diameter is smaller due to the clip. And, therefore, the rim and edge area opposite the clip will not be round at completion of the operation but will have the shape indicated by Figure 3A.

FIGURE 1

First Process Blank
Clipped Planchet

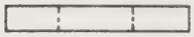


FIGURE 2

Edge View of Planchet
Shown in Figure 1

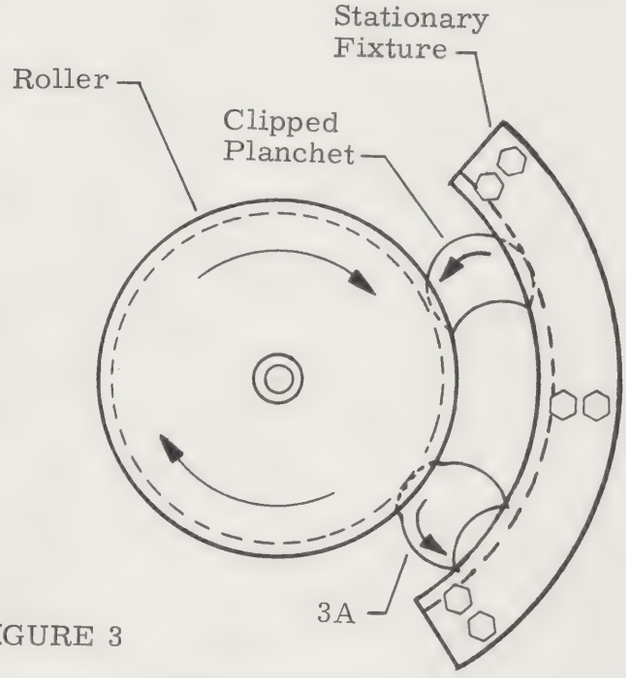


FIGURE 3

Upsetting Mill

5. Up to this time there has been no change in the radius of the clip, Figure 4A. However, the area opposite the clip, Figure 4B, will be a bulge having little if any upset edge, since part of it was not compressed or was compressed less than other areas. The ends of this bulge will start at points diametrical from ends of the clip. The edge opposite the clip will have the appearance shown in Figure 5.

6. When the planchet is fed into the coining press preparatory to the strike it has the shape illustrated in Figures 4 and 5. During the strike of the coin the fields are compressed, the reliefs are raised, and the planchet metal forced outward toward the collar in the clipped area and against the collar in other areas.

7. Following the strike the coin has the characteristic lines and contours opposite the clip as illustrated in Figures 6B and 7. There are several factors, in addition to clip size, which can influence the shape and dimensions of the characteristics. These include such factors as space between dies, press operating pressure and dwell time, position of the planchet within the collar, vertical and horizontal alignment of the dies, and that part of the coin design impressed on the area opposite the clip. Under certain combinations of the factors one or more, and occasionally all, of the identifiable characteristics may not be produced. In Figure 6A, the dotted line indicates the clip radius prior to the strike and the solid line the radius after the strike. (The periphery of a normally struck coin should not fit properly into the clipped area of a clipped planchet because the radius of a normally struck coin is always smaller than the radius of the clip.)

8. The bulge, Figure 4B, which was evident prior to the strike, no longer exists after the strike and this area now appears as shown in Figure 6B. The rim, Figure 6B as viewed from the obverse and reverse usually is wider than adjacent areas and the flat surface of the edge, Figure 7, generally extends the full or nearly full dimension of the coin edge. The typical characteristics of the rim and edge opposite the clipped area after the strike are illustrated in Figures 6 and 7. On a coin they may be found on the obverse rim or reverse rim or edge or combinations of these.

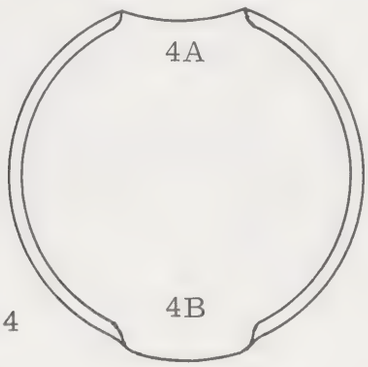


FIGURE 4

Second Process Blank
Clipped Planchet

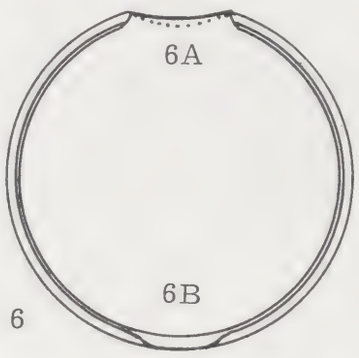


FIGURE 6

Normally Struck Coin Struck
on a Second Process Blank
Clipped Planchet

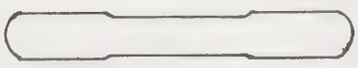


FIGURE 5

Edge View of Planchet
Shown in Figure 4B

FIGURE 7

Edge View of Coin
Shown in Figure 6B

9. The sketches in Figures 6 and 7 illustrate composites of the characteristic lines and contours one should look for when examining the area opposite the clip. The photographs, Figures 8 and 9, illustrate the typical appearance on actual coins and show that the area within which the characteristic lines and contours are to be found is defined by points diametrical from ends of the clip.

FIGURE 8

FIGURE 9

CONCLUSIONS

The area opposite the clip has identifiable characteristic lines and contours which are a consequence of the clip. And this area is a source of valid information for use in authenticating a clipped planchet.

The possibility of fabricating the several characteristics opposite the clipped area is remote.

COMMENT: "This is, without a doubt, the most startling discovery in authentication to be presented in the past five or six years. It makes most of us in the field "red faced" but only proves that there are new discoveries awaiting those with questioning minds". Mort Goodman - Director, Research & Authentication.

The NECA GLOSSARY – RESEARCH #2 September 1967

the *Lincoln Memorial*

a history, description, and nomenclature

by SI KAUFMAN C-019

THE LINCOLN MEMORIAL, Washington, D.C., a stately, temple-like structure, crowns a terraced plot in West Potomac Park. It stands upon the main axis of the Mall, weighing, so to speak, its western end to counterbalance the mass of the capitol at the eastern termination. The tall shaft of the Washington Monument, a half mile to the east, as well as the white marble colonnade of the Lincoln Memorial, is mirrored in the surface of the long reflecting pool which lies between them.

The grounds surrounding the Memorial include a wide encircling drive from which one can view the main rectangular structure and the colossal figure of Lincoln within; an embankment known as the Potomac Water Gate to the West; and to the southwest, the Arlington Memorial Bridge. As from the Arc de Triomphe in Paris, drives and parkways radiate in all directions.

Concerted efforts to erect a memorial to Abraham Lincoln began in 1867, two years after his assassination. In that year, Congress incorporated the Lincoln Monument Association, which called upon Clark Mills, able American sculptor, for tentative plans. Partly because of political embroilment, the plan fell through.

In 1911, Congress created a second body, the Lincoln Memorial Commission, with former President Taft as Chairman. This commission chose the present site for the Lincoln Memorial, although the decision was made in the face of strong opposition, for in the early years of the century, West Potomac Park was considered a remote and inaccessible region.

Upon the advice of the National Fine Arts Commission, the Lincoln Memorial Commission selected Henry Bacon as architect, Daniel Chester French as sculptor for the Lincoln statue, and Jules Guerin as Mural decorator. Total expenditures of $2,940,000 were authorized to carry the work to completion. Ceremonies for the laying of the cornerstone were held on February 12, 1915, the

one hundred and sixth anniversary of Lincoln's birth. Formal dedication exercises took place on May 30, 1922. The Lincoln Memorial, with its unrivaled setting at the end of the Mall - a great temple with Greek Doric columns executed in white marble - is perhaps the most impressive and stately monument in Washington. In its architectural treatment, the Memorial involves a number of unusual features. Although based upon a Greek temple form, the monument departs in many respects, from the traditional conception.

To provide a suitable eminence for this monumental building, it was necessary to set it upon a rectangular plateau. This terraced platform is retained by a 14-foot granite wall and surrounded by a circular lawn, 1,200 feet in diameter, planted with boxwoods. The approach is by a flight of marble steps some 130 feet wide, which sweeps upward from the Reflecting Pool, breaking the terraces on the East side. This broad stairway is flanked by mammoth cheek blocks with tripods, the latter cut from monoliths of pink Tennessee marble and standing 11 feet high. The foundations of the structure rests upon bedrock, from 44 to 65 feet below the original grade of the site. The superstructure of white Colorado marble is approximately 80 feet high and rests on a base composed of colonnade, measuring 188 by 118 feet. The interior is divided by Ionic columns into three halls. The 36 fluted columns comprising the exterior colonnade represent the States in the Union at the time of Lincoln's death; each of them is 44 feet high and 7 feet 5 inches in diameter. The names of the respective states are inscribed on the frieze above the columns between wreaths in bas-relief. A sculptured cresting of lions' heads alternating with conventionalized wings, breaks the severity of the cornice. On the attic paraphet are 48 festoons in bas-relief symbolizing the present States of the Union with their names inscribed beneath.

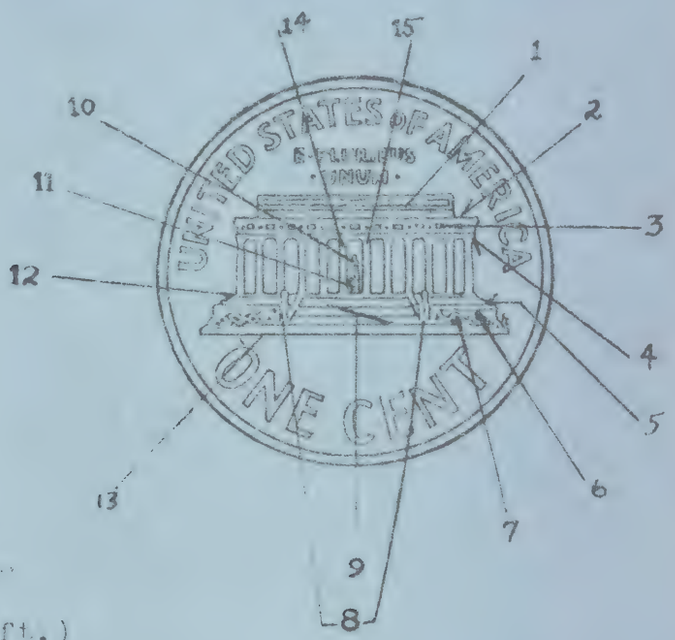
Before passing to the interior, the visitor should note that columns, entablature, and walls tilt inward to avoid the optical illusion of bulging at the top. The main chamber within the structure is 60 feet wide, 70 feet long and 60 feet high. In the smaller halls (63 feet by 38 feet), opening to left and right, are tablets inscribed with the Gettysburg Address of Lincoln. Murals subdued in color fill the spaces above and beside these tablets. Throughout the interior, the floors and the wall base are of pink Tennessee marble. Walls are of Indiana limestone, and the ceiling is of thin marble panels supported by a framework of bronze girders. These panels are treated in the old Florentine manner with a saturation of beeswax to make them translucent. The daylight reaching the inner hall through the eastern opening is supplemented and softened by the quieter glow diffused throught the marble ceiling.

The notable statue of Lincoln, enshrined within a dignified Attic setting is the work of Daniel Chester French. The realistic figure, seated in a flag-draped curule chair, looks out through the colonnade to the Monument and Capitol beyond. It is of crystalline Georgia marble, constructed of 20 blocks interlocked so perfectly that the statue seems one huge monolith. The figure is 19 feet high, the great armchair, 12½ feet. The Piccirilli Brothers, a noted firm of stonecutters, took 4 years to complete the work. In the west wall, over the head of the statue, is carved the following inscription:

IN THIS TEMPLE
AS IN THE HEARTS OF THE PEOPLE
FOR WHOM HE SAVED THE UNION
THE MEMORY OF ABRAHAM LINCOLN
IS ENSHRINED FOREVER

The visitor will find it worth while to revisit the building at night. A special lighting system

illuminates the figure and endows the entire composition with a striking and dramatic effect...In the north and south walls are murals, painted on canvas by Jules Guerin, to typify allegorically the principals evident in the life of Lincoln. The decoration above the Gettysburg Address (south wall)



1. Attic
2. Cornice
3. Frieze
4. Architrave
5. Foundation
6. Retaining Wall
7. Shrubbery
8. Tripod (A) R.H. (B) L.H.
9. Steps
10. Lincoln Statue
11. Pedestal
12. Lower Retaining Wall
13. Encircling Drive
14. Columns (A) 1-thru-6-L.H.
15. Columns (B) 1-thru-6-R.H.

(The columns are numbered from the center columns out, both center columns start with 1-Right...1 Left.)

N.B. The combination of Cornice (2), Frieze (3), and Architrave (4), is called the "Entablature". The portion between each column and beam is called the "Arcade"

centers around a group portraying Emacipation. An angel of truth is freeing a slave. To left and right are groups typifying Justice and Immortality. Above the Second Inagural Address (north wall), Unity (the angel of peace joining the hands of North and South) is flanked by Fraternity and Charity. Altogether there are 46 figures in the two panels. To give permanence to his colors, the painter has mixed them with white wax and kerosene, a process somewhat similar to that used by the Egyptians in the decoration of their tombs.

The original plans for the setting of the Memorial called for a cruciform body of water. However, the erection of the Munitions and Navy Department buildings on Constitution Avenue in the World war emergency, encroached to such extent on the Memorial grounds, that it would have been impossible to build the north side of the cross. Instead, a shallow rectangular basin, with a subsidiary transverse pool at its eastern end, was designed by Henry Bacon, Charles McKim and others, to extend along the Mall axis from the foot of the Memorial. The two pools form a shimmering vista of water almost 2,000 feet long. The construction work required the removal of 135,000 cubic yards of earth. The small transverse Rainbow Pool is so called by reason of its 200 jets which throw the water upward and inward, breaking it into spray, which refracts the sunlight into a rainbow effect. Since this fountain is turned on only at stated intervals, about twice a week, the display is announced in advance.

- Si Kaufman -

(Submitted through Joe Rigas, Assistant Director of Research for NECA)

THE CLIPPED PLANCHET -- A COMPLETE COIN

By BLAKESLEY

INTRODUCTION

This research report reveals a new type clipped planchet coin and therefore it is appropriate to mention previously reported types before introducing the new one.

The general types of clipped planchet coins indicated in Fig. 1, and comments on the origin of clipped planchets, are reported among several numismatic publications.[1,2,3,4,5] All these types are characterized by an obvious absence of metal on the periphery of the coin as illustrated, and they are named according to the shape of the planchet on which they were struck.

FIGURE 1. PREVIOUSLY REPORTED CLIPPED PLANCHET COIN TYPES

In general, these clips may be said to range in size on coins from large clips down to small rim clips. It was the fact that there isn't anything in the Mint process to preclude even smaller clips being produced that brought up the question which prompted this research. Namely, could a coin struck on a clipped planchet be a complete coin and still be positively identified as a clipped planchet coin? It was an intriguing question and some years ago I decided to conduct some research in an attempt to learn the answer.

The answer turned out to be yes. The coin, normally struck on a second process blank clipped planchet, is fully round, its edge is of full thickness, and it is of normal weight. Call it the DISK CLIP coin, an appropriate name and not likely to be confused with names of other type clipped planchet coins. The DISK CLIP coin is named for the fully round shape of the coin and not for the shape of the planchet on which it is struck.

The research objectives and approach employed in learning the answer were:

To determine the visible characteristics that could be used to detect and identify such a coin.

To find a coin having the identifying characteristics.

To verify that the identifying characteristics on the coin were produced because the coin was normally struck on a blank clipped planchet.

SCOPE OF THE REPORT

This report is concerned with United States coins popularly known as clipped planchet coins. Discussion is limited to clad and non-clad single clip coins normally struck on second process blank round clipped planchets, whose edges are produced by shearing action of the blanking punch and die combination.

As used in this paper the term "blanking process" means the overall process involved in the blanking of planchets. The blanking process, including explanations of how clipped planchets come about, has been dealt with elsewhere[2,3] and will not be repeated here. However, one selected operation within the overall process is discussed, the blanking (cutting) operation.

Sketches illustrate particular points in this report. They are not to scale and are not intended to depict the ideal condition of an operation or actual appearance of Mint items.

DISCUSSION AND RESULTS

The research was started with a review of the Mint blanking process. Results of this review indicated that planchets could be produced with clips so small that when struck by dies in the coining press the clipped area should be forced against the collar under pressure thus forming the fully round DISK CLIP coin. Furthermore, the clips could be so small that the coins should be within weight tolerance acceptable to the Mint.

Blanking (Cutting) Operation

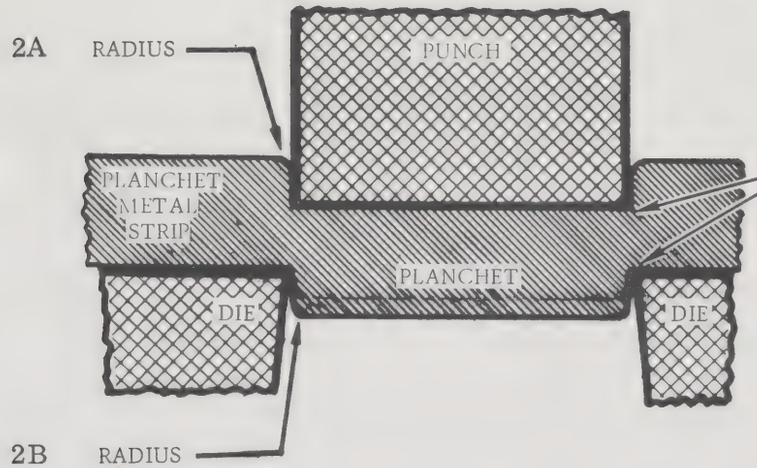
Numismatic publications usually account for the blanking process with brief mention in general terms of how planchets are produced, but with little, if any, mention of the blanking (cutting) operation. Therefore, for this report to be meaningful in terms of identifying DISK CLIP coins, the blanking operation is discussed to explain how a sheared edge is made and the difference in orientation between the planchet edge produced by the blanking die and the hole edge produced by the blanking punch.

During a blanking operation the metal is stressed between cutting edges of the punch and die. These stresses produce a controlled fracture of the metal which is stressed beyond its ultimate strength and separates. The action is summarized in the three steps following and is illustrated in Figure 2A through 2E.

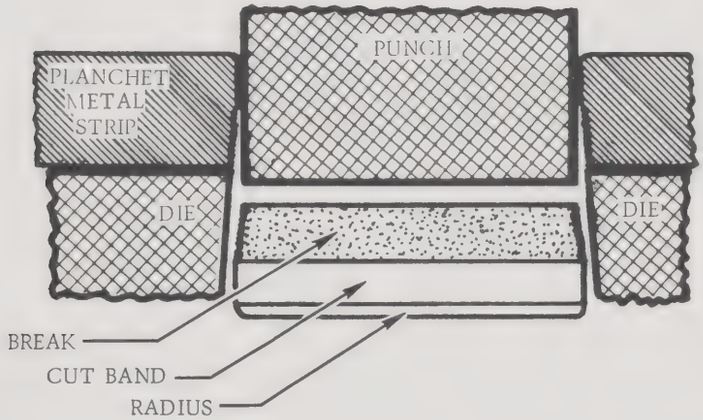
The punch press slide (not illustrated) moves downward on the pressure stroke compressing the metal between the punch and die causing a radius, Fig. 2A, on the punch side of the planchet strip and a radius, Fig. 2B, on the die side of the planchet strip.

The punch penetrates the planchet metal to a depth of about one third to one half the thickness of the metal strip and about the same amount of metal is forced into the die opening and is penetrated by the die before the fracture occurs.

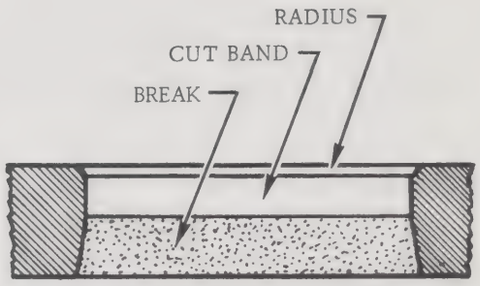
When the metal has been stressed beyond its ultimate strength the cutting action ends and the metal commences to fracture. The fractures start in the planchet metal between the cutting edges of the punch and die, Fig. 2C, and travel toward each other. When the fractures meet the metal breaks and the planchet falls free as shown in Figure 2D.



2C FRACTURES START HERE AND PROGRESS TOWARD EACH OTHER UNTIL THEY MEET AND THE METAL BREAKS.



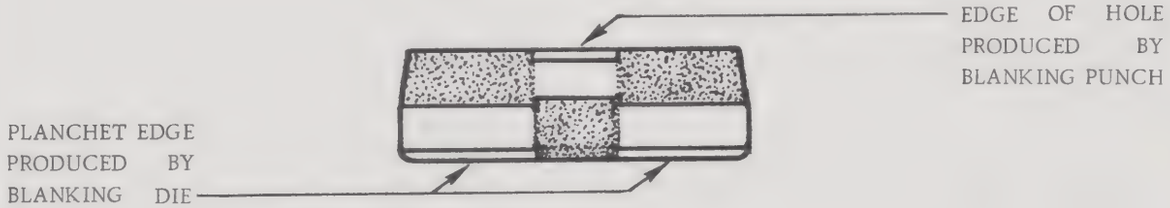
2D EDGE VIEW OF PLANCHET PUNCHED OUT OF THE PLANCHET METAL STRIP.



2E EDGE VIEW OF HOLE REMAINING IN PLANCHET MATERIAL AFTER PLANCHET IN 2D HAS BEEN PUNCHED OUT. It is this edge that becomes what is called the clipped edge of a round clipped planchet.

NOTE

Subsequent to the operation described above if a punch, on its downward stroke, overlaps the edge of a previously punched hole in the planchet strip an incomplete planchet is punched out. An edge view is illustrated in 2F.



2F EDGE VIEW OF A FIRST PROCESS BLANK ROUND CLIPPED PLANCHET SHOWING HOW THE CUT BAND AND BREAK OF THE CLIPPED EDGE ARE ORIENTED OPPOSITE TO THOSE OF THE PLANCHET EDGE.

FIGURE 2. BLANKING (CUTTING) OPERATION

The portion of the planchet metal penetrated by the punch and die is called the "CUT BAND". The cut band will have a relatively smooth surface. The portion of the planchet metal which fractured and separates is called the "BREAK". This band will have a relatively rough surface. It is important to understand that the RADIUS, CUT BAND, and BREAK produced on the planchet edge by the die, Fig. 2D, are oriented opposite from those produced on the hole edge by the punch, Fig. 2E, which are left in the planchet metal strip. These characteristics are evident on round clipped planchets and are most significant factors in identifying a clad DISK CLIP coin.

The blanking of a complete planchet has been summarized above and illustrated in Fig. 2A through 2E. Subsequently, if a punch on its downward stroke overlaps the edge of a hole in the planchet strip, such as shown in 2E, an incomplete planchet is punched out. It is called a round clipped planchet. Typical characteristics found on the edge of such planchet are illustrated in Fig. 2F. Actual characteristics on a clad clipped planchet edge are shown in Fig. 3.

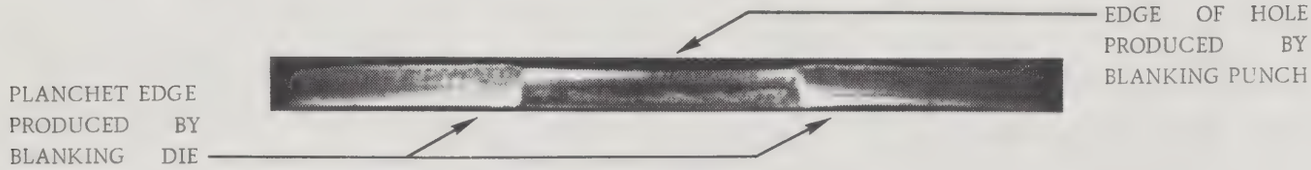


FIGURE 3. EDGE VIEW OF A FIRST PROCESS CLAD BLANK ROUND CLIPPED PLANCHET

Forming A DISK CLIP Coin

A DISK CLIP coin is made in the same manner as other coins. It is normally struck in the coining press. During the strike the obverse and reverse fields are compressed, the reliefs are raised, and the planchet spreads outward until it is restrained by the collar. The pressure forces the small clipped area against the collar and a fully round DISK CLIP coin is formed.

Determining The Visible Identifying Characteristics

Since more than one kind of characteristic, or one kind in more than one location, is necessary on previously reported type clipped planchet coins to permit accurate identification, I reviewed the known characteristics and chose three which one might find on coins with small clips. The three are "metal flow lines on reliefs", "bifurcation of reliefs near the rim", and "reliefs near the rim not fully formed". These three are not, as individual characteristics, reliable as identifiers of clipped planchet coins because each of them may be found on coins which are not clips. On the other hand, they are acceptable as identifiers when in combination with additional characteristics of an authentic clipped planchet coin. For an acceptable combination of identifiers I needed to have a characteristic peculiar to a DISK CLIP coin.

A DISK CLIP coin would not have the obvious absence of metal at the clipped edge which is usually associated with clipped planchet coins. This characteristic would be obliterated during the strike because there would be sufficient planchet metal to fill the die cavities and flow outward against the collar thus forming a fully round coin. Although the opposite cut bands and breaks also should be obliterated by the strike, they nevertheless appeared to be the only characteristics having any potential as identifiers that would be peculiar to a DISK CLIP coin. It seemed to me there was a possibility that the opposite cut bands could manifest themselves as discernible patterns on the coin edge. If I could detect such an indication I might be able to identify a DISK CLIP coin.

Search For A DISK CLIP Coin

For several years prior to the Coinage Act of 1965 I looked for such a coin and did find a few likely candidates. They had typical characteristics such as "metal flow lines on reliefs" and "reliefs near the rim not fully formed" which indicated the coins might have been struck on planchets having small clips. However, as one should expect, there was not any indication of opposite cut band patterns on their edges because they were obliterated during the strike due to the metal being a single color. Since I did not find any way of proving these coins to be DISK CLIP coins I returned them to circulation.

More recently, when the Mint was considering the use of clad planchet material it seemed certain that if clad coins were produced a DISK CLIP coin would be found. And proof of its authenticity would be possible because of the contrasting colors of the layers of metal.

When the Coinage Act of 1965 was passed and coins minted, I started searching for a clad DISK CLIP. My source of coins for the search was from circulation (pocket change) only. Every clad coin I received in change was examined -- obverse, reverse, and edge -- with at least a 10X magnifier. In 1966 I found the 1965 Washington Head Quarter DISK CLIP coin shown in Figure 4, having the following characteristics.

CIRCUMFERENCE: Complete -- fully round.

DIAMETER: 0.956 inch, measured from clipped edge to edge opposite the clip.

EDGE REEDING: Full reeding around the entire periphery of the coin.

RAISED RIM THICKNESS: 0.066 inch, measured on the flat surface of the raised design rim from obverse to reverse in the clipped area.

WEIGHT: 5.65 grams. This is 0.02 grams lighter than the nominal weight of 5.67 grams specified in the Coinage Act of 1965. The Mint publications I have do not specify a weight tolerance, but since many uncirculated clad quarters obtained for weighing purposes were found to be even lighter than 5.65 grams it is apparent that this DISK CLIP quarter is within weight tolerance acceptable to the Mint.

CLIP SIZE: It is estimated that the clip in the first process blank planchet was not larger than 10 to 12 degrees of arc of the full planchet circle.

CLIPPED EDGE APPEARANCE: Evidence of the opposite orientation of the cut bands and breaks from the blanking operation show clearly.

METAL FLOW LINES ON RELIEFS: None observed.

BIFURCATION OF RELIEFS NEAR THE RIM: Although one digit and three letters were not quite fully formed, no bifurcation was observed.

EFFECT OPPOSITE THE CLIPPED EDGE: Because of the small size of the clip, evidence of the effect opposite the clip, on this particular coin, is uncertain but it appears to manifest itself in a minutely wider rim on the reverse side only. The effect opposite the clip has been described in detail and illustrated elsewhere [6] and subsequently discussed in numismatic publications.[7]

RELIEFS NEAR THE CLIP NOT FULLY FORMED: On the obverse -- the inner part of the raised rim between "1" and "9" in the date, and part of the "1" closest to the rim are not fully raised. On the reverse -- the inner part of the raised rim above "A" in STATES, that part of the serif of both the letters "T" closest to the top of the letter "A", and also the top of the letter "A" are not fully raised.

COIN IS FULLY ROUND, AND THE EDGE OF NORMAL THICKNESS IS COMPLETELY REEDED.

INNER PART OF RAISED RIM BETWEEN "1" AND "9" IN DATE ② AND PART OF THE "1" NEAR RIM ③ ARE NOT FULLY RAISED.

PATTERN OF THE OPPOSITE CUT BANDS AND BREAKS ON THE CLIPPED EDGE ①. (Vertical lines denote ends of clipped area)

INNER PART OF RAISED RIM ABOVE "A" IN STATES ②, SERIF OF EACH "T" CLOSEST TO TOP OF "A" ②, AND ALSO THE TOP OF "A" ③, ARE NOT FULLY RAISED.

EFFECT OPPOSITE THE CLIP IS A MINUTELY WIDER RAISED RIM EVIDENT NEAR THE "0" ②.

LEGEND
① Clearly visible without magnifier.
② Easily visible with 10X magnifier.
③ Visible with 50X stereo microscope.

FIGURE 4. ONE DISK CLIP COIN AND ITS IDENTIFYING CHARACTERISITCS

Verification Of The Identifying Characteristics

The reliefs near the clip that are not fully formed and the effect opposite the clipped edge are characteristics found on this coin that are among those used to aid in identifying other types of clipped planchet coins. However, the visible pattern on the coin edge which results from the opposite cut bands and breaks is a characteristic peculiar to the DISK CLIP coin. Together, these provide the mutual support which makes an acceptable combination of the identifying characteristics and permits verification that the coin shown in Figure 4 is indeed a clipped planchet coin.

There are not sufficient data at this time from which to determine what can be considered the normal edge appearance of a DISK CLIP coin. But based on this research, which includes study of the three known clad coins with the DISK CLIP characteristic, Fig. 5, the following is a start toward making such a determination.

> The characteristic pattern resulting from opposite cut bands and breaks will be evident on the clipped edge of the coin.
>
> Supporting characteristics, such as "reliefs near the clip that are not fully formed", may not always be evident. (The smaller the clip the less likely it is that supporting characteristics will be evident.)

My statement regarding the three known clad coins with the DISK CLIP characteristic is not intended to imply that DISK CLIP coins are rare. Clipped planchet coins are major numismatic error coins, but they are not rare.

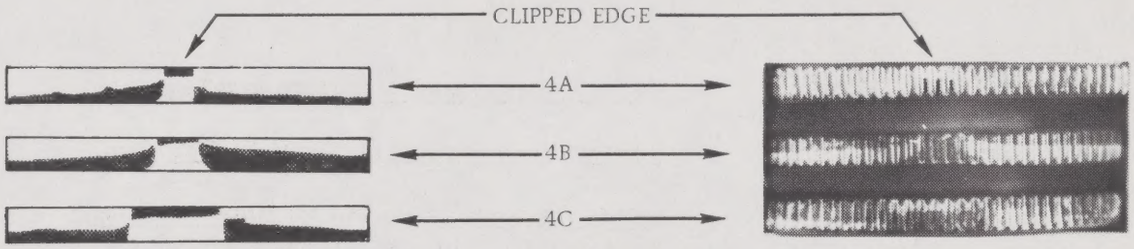


FIGURE 5. PATTERNS ON THE CLIPPED EDGES OF THREE COINS HAVING THE DISK CLIP CHARACTERISTIC

Future Research Of The Clad DISK CLIP Coin

More research is required to determine the appearance of the clipped edge that may be considered normally characteristic of a DISK CLIP coin.

Future research should include effort toward determining characteristics, in addition to those discussed here, that are acceptable for use in detecting, identifying, and authenticating this new type numismatic error coin.

The first source of coins for research might well be ones own clad clipped planchet coins. Examination of them could disclose some with the DISK CLIP characteristic in addition to the more obvious type clip.

CONCLUSIONS

A clad coin normally struck on a second process round clipped planchet can be a complete coin and can be positively identified as a clipped planchet coin.

There were no complete coins found struck on non-clad planchet material that could be identified with certainty as clipped planchet coins.

ACKNOWLEDGMENTS

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